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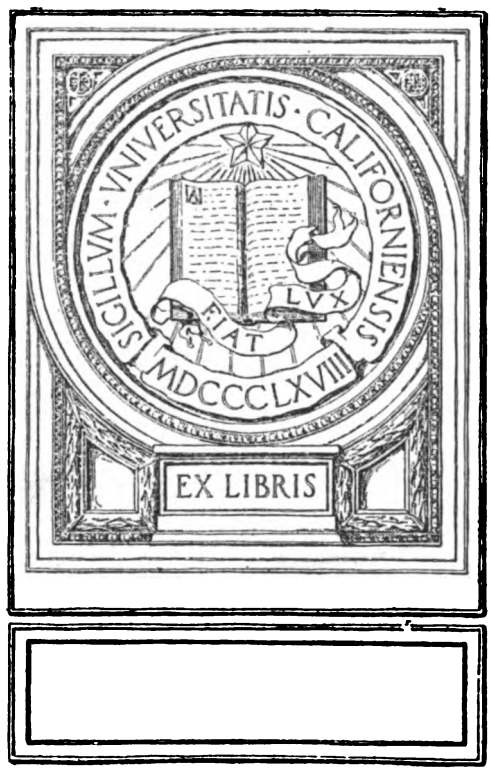
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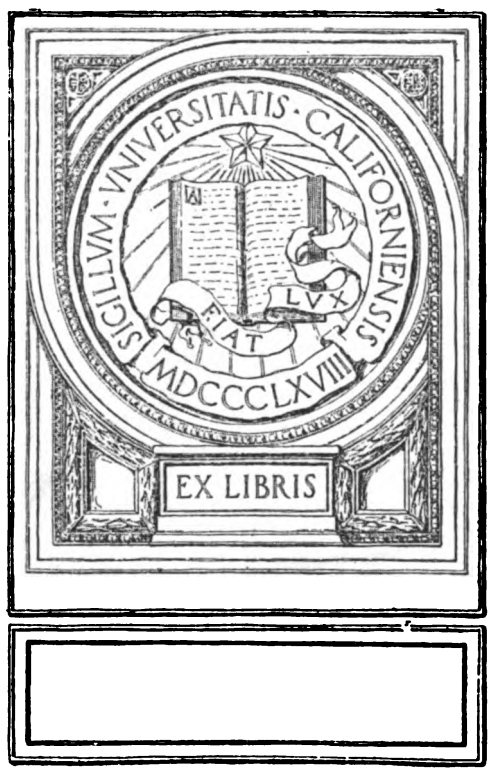
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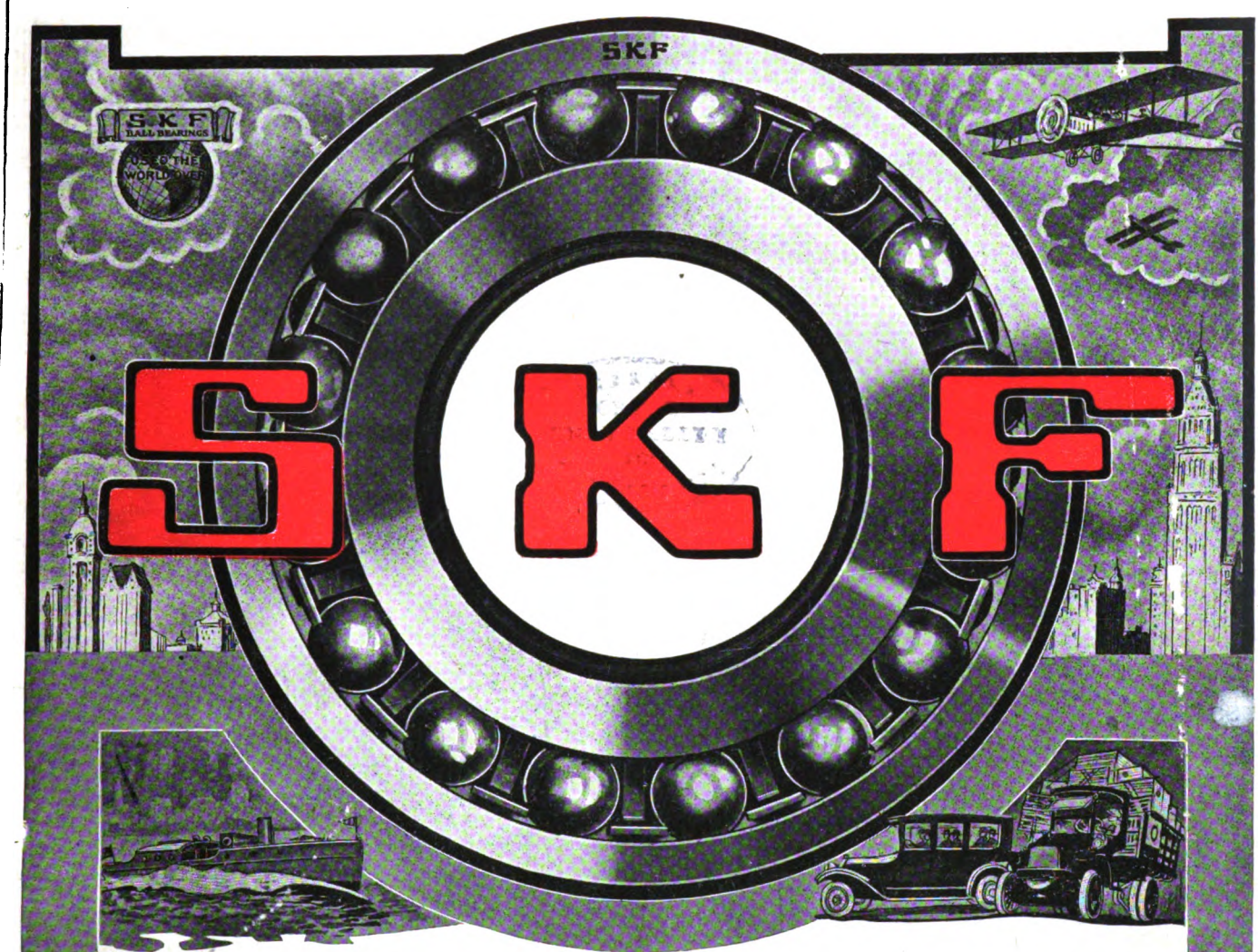
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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

ol. X. PAWTUCKET, R. I. JANUARY, 1919 No.

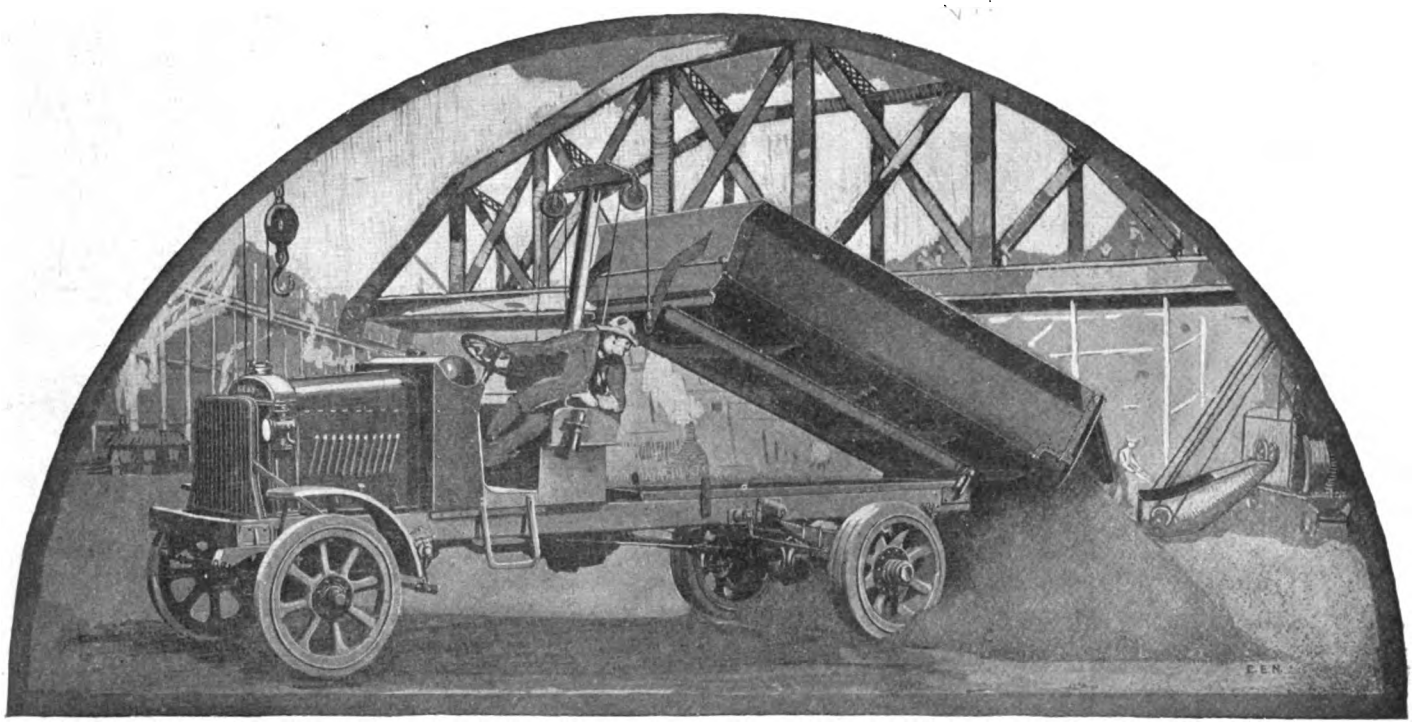


NO other bearing is so universally used as SKF. On the fastest airplanes—the sturdiest trucks—the swiftest motor boats and a host of other applications, the self-aligning feature and the double row of balls give SKF exclusive characteristics of efficiency and quality.

HARTFORD **SKF BALL BEARING CO.** CONNECTICUT

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DENBY
MOTOR TRUCKS

You'll Like This New Denby

This 3½ Ton Denby gives a new meaning to the term *Heavy Duty* —sets a new standard of power, capacity for work under any conditions, and economy of operation and maintenance.

While the model is a new one, the design is not, for it is a companion truck to the 5-Tonner that has proved so successful in the heaviest service. It was brought out in response to an insistent demand from users and dealers, for a truck of lighter capacity, but the same quality and capability as the 5-Ton Denby.

We have held this model back from production for a year, that there might be no question concerning any detail of design. Model cars were sent out over the country, testing its hill climbing, its ability to negotiate *any* roads, under the most adverse conditions.

Two of these model cars spent the summer working in eastern Oregon hauling wheat over sandy, dusty roads. All the tests were made under actual service conditions with inexpert drivers.

Only when we had proved these trucks under the worst of conditions and were absolutely certain they were as near perfect as human skill could make them, did we O. K. them for production.

The Denby line is now complete. With trucks of 1, 2, 2½, 3½ and 5 Tons, there is a model for each trucking need

Denby Motor Truck Company - - - Detroit

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

Vol. X. No. 1. PAWTUCKET, R. I. JANUARY, 1919

NEW YORK AND CHICAGO TRUCK SHOWS SURE SUCCESSES

Trade Associations Will Have Largest Exhibitions Ever Held in America—Have Generous Support from Industry and Surprising Lists of Exhibitors—Many Events Will Attract Manufacturers, Dealers and Owners During Show Periods

DESPITE the recommendation of the National Automobile Chamber of Commerce that no power vehicle exhibitions be held this year, and despite the fact that for six consecutive years



Charles M. Brown, President, Automobile Dealers' Association of New York City.

that same body had rejected all proposals to resume shows of trucks that had been abandoned after the two part shows of 1913, there will be expositions of trucks in both New York City and Chicago, organized by the dealers independent of the body that is regarded as dominating the industry of America.

For years the National Automobile Chamber of Commerce has organized both the Chicago and New York automobile shows. The original shows in New York City were promoted by the Automobile Club of America, first as club events, and then this body joined with the Association of Licensed Automobile Manufacturers and the character and proportions of these shows were changed until they became recognized as "national," this largely from the fact that the industry represented by the association was regarded as approving the exhibitions.

The first New York shows were intended to benefit the treasury of a club, and when the exhibitions were held jointly the profits were shared by the two organizations. Later the association decided that it would organize and promote the New York show because it was profitable, and then the club joined with the so-called "independent" group of manufacturers, which refused to recognize the Selden patent, and for several years the metropolis had two shows.

When the Selden patent was invalidated by adjudication there was a reorganization of the Association of Licensed Automobile Manufacturers, nearly all interests of the industry being eligible for membership, and the National Automobile Chamber of Commerce was formed. What had taken place in New York City impelled the A. L. A. M. to acquire control of the Chicago show, which had been conducted by an association of dealers, and while there had never been conditions paralleling those existing in New York City, there never was serious opposition to the association taking over the Chicago exhibition and promoting it and making it as profitable as was practically possible.

Miles Was Sole Show Manager.

For years the New York show was or-



Charles M. Larson, Chairman, Show Committee, Automobile Dealers' Association of New York City.

ganized and operated by a show committee, but in Chicago Samuel A. Miles had managed the event practically from the time that the shows were instituted. Then the association placed the New York show under Mr. Miles' direction, and since then until this year Mr. Miles has

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The 69th Regiment Armory, New York City, in Which One Division of the Passenger Car and Truck Shows Will Be Housed from Feb. 1 to 15.

been occupied with the management of both exhibitions.

The National Automobile Chamber of Commerce has always regarded the New York and Chicago shows as "national" in that it, with allied associations, refused to sanction some other exhibitions, those who exhibited at the unsanctioned shows doing so with the prospect of being debarred as exhibitors at the "national" shows, which were believed to be the largest and the most productive from the viewpoint of the exhibitor.

There can be no denial of the fact that some of the so-called dealers' shows were very large, and that they were profitable to the organizations promoting them. But the National Automobile Chamber of Commerce dominated the power vehicle shows to a much larger degree than would appear on the surface from the fact that the members agreed to be bound by any decision with reference to exhibitions.

Last Truck Shows in 1913.

The National Automobile Chamber of Commerce held its last truck shows in New York and Chicago in 1913. Since that time it has refused to sanction exhibitions of power trucks, although there has been innumerable proposals and not a little agitation in the industry and the trade to promoting such shows. Many reasons have been stated to justify this opposition to truck exhibitions. The association has always held that passenger car shows were essential and that these were deserving of encouragement. At the other hand the exhibition of trucks was not believed to be productive of sufficient results to justify the additional expense or organization and promotion.

Various reasons have been stated as reflecting the attitude of the National Automobile Chamber of Commerce, among these being that truck shows held jointly with passenger car exhibits were overshadowed by the car departments and the return financially was certain to be poor; that holding a truck show at the conclusion of a passenger car show was ill advised from the fact that practically all local interest was lost; that to expect the truck dealers (who in some instances were also passenger car dealers) to take the time that would be required for such a show from their business was unreasonable and expensive; that truck buying was influenced by existing transportation needs and not by any special demonstration that would be practically possible at a show; that there was an unnecessary burden upon the manufacturers and their sales organizations, as well as the expense incidental to representation.

All or any of these reasons may have had weight in the decision of the National Automobile Chamber of Commerce six years ago when the number of trucks in use in America was comparatively small. Perhaps the conditions resulting from the European war and the subsequent participation of the United States in the conflict may have all influenced decision. The industrial and commercial uncertainty and the need of readjustment of industry to meet post-war conditions may have been ample foundation of the recommendation for the association that no shows be held during the present year.

Dealers Insisted on Shows.

There can be no criticism of the sincerity of the members of the association



Madison Square Garden, New York City, in Which the Main Division of the Passenger Car and Truck Shows Will Be Located from Feb. 1 to 15, Where the Automobile Shows Were Held for a Number of Years.

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who voted on the recommendation, but there could be no greater divergence of opinion that is represented by the action of the sales representatives of these same manufacturers in deciding to organize, promote and finance the exhibitions that the industry desired should be abandoned.

The cessation of hostilities in so short a period before the usual season for exhibitions allowed litle time for preparation and forced extreme activity on the part of the Automobile Dealers' Association of New York and the Chicago Automobile Trades Association. Not only this, conditions had materially changed in New York City, for the Grand Central Palace had been acquired by the Du Pont interests and was converted into an army hospital and was no longer available.

Limited Time Not an Obstacle.

One might assume that this and the fact that a manager of long experience with automobile shows was not obtainable would be discouraging. Not so, however, with the New York association, which first voted not only to have a passenger car exhibition, but to follow this with a show of trucks. Next it appointed a show committee headed by C. H. Larson as chairman, and the secretary of the association, Charles A. Butler, was made manager, he acting under the authority of the show committee. Then the historic Madison Square Garden was engaged, and when the number of applicants for space was found to be so numerous that the Garden would not afford adequate space for the show, the 69th Regiment Armory, but a block distant from the Garden, was secured. The combination of the two buildings will give more exhibition area than has ever been available at any previous exhibition.

Following the custom established when both passenger car and truck shows were held the exhibition will continue for two weeks, the passenger car display being opened the evening of Saturday, Feb. 1, and continuing until the evening of Feb. 8, and the truck show being opened the morning of Feb. 10 and continuing until the evening of Feb. 15, the two covering a period of 15 days.

Will Show in Two Buildings.

The original intention was to have the display of passenger vehicles in both buildings, but to have the truck exhibition in Madison Square Garden. The large number of applications for space and the decided interest manifested brought about a change of plan, so that both buildings will be used both weeks, but the displays of accessories, supplies, equipment, etc., for trucks will be shown only at the Garden the second week.

During the first or passenger car show cars and accessories, equipment, supplies, parts, etc., will be exhibited in both buildings, but during the second or truck show vehicles will be shown at the Garden and the Armory, and the accessories only at the Garden. The buildings will be open from 10:30 in the morning until 11 o'clock in the evening. Each ticket sold will entitle the holder to admission to both buildings, there being a coupon attached that will be accepted at either when the original has been surrendered, and the coupon may be used at any time during

NINETEENTH ANNUAL NEW YORK AUTOMOBILE SHOW.

Commercial Car Exhibits Shown Feb. 10-15.

Truck	Space	Exhibitor	Address
Clydesdale	T-2	Arlington Motors Corp.	New York City
Autocar	M-8	Autocar Sales and Service Co	New York City
Dodge Bros	M-6	Colt-Stratton Co	New York City
Day-Elder	M-6	Colt-Stratton Co	New York City
Acme	V-2	Commercial Repair Co., Inc	Brooklyn, N. Y.
Corbitt	T-8	Corbitt Motor Truck Co	New York City
Gasoline Loco	F-1	Holt Manufacturing Co	New York City
Master	M-5	Cutting Larson Co	New York City
Denby	C-3	Denby Eastern Distrib., Inc	New York City
Economy	460-3	Economy Sales Co	New York City
Diamond T	S-4	Diamond T. M. Co. of N. Y., Inc	New York City
Garford	S-6	Garford Motor Truck Co	New York City
Velie & Atlas	M-3	Garland Auto Co	New York City
Bethlehem & Graham	A-1	Graham Bros. Sales Co	New York City
Truxton	C-2	Hayes-Diefenderfer Co	New York City
Stewart	T-5	Herman Motor Truck Co., Inc	New York City
Fordson	V-1	Albert Hirst, Inc	New York City
Hurlburt	R-6	Hurlburt Motor Truck Co	New York City
Jaxon Equipt Truck	V-3	Jaxon Steel Products Co	Detroit, Mich.
Nash	R-5	Kaufman-Stowers Co	New York City
Kelly-Springfield	R-2	Kelly-Springfield Motor Truck Sales Co	New York City
Sanford	401-5	Lawrence Motor Sales Corp	New York City
Hall	B-2	Lewis-Hall Iron Works	Long Island C.
Locomobile	M-1	Locomobile Co. of America	New York City
Maxwell	B-3	Maxwell Motor Sales Co	New York City
Menominee	T-3	Menominee Motor Truck Co. of N. Y., Inc.	New York City
Giant	H-3	L. W. Mulford Co., Inc	New York City
Fulton	D-1	New York Fulton Truck Co	New York City
Lapeer Tractor	C-1	Owen Magnetic M. S. Corp	New York City
Packard	M-2	Packard Motor Car Co. of N. Y	New York City
Paige	T-4	Paige-Detroit Co. of N. Y.,	New York City
Warren	S-3	Pitts. Motor Car Repair & Sales Corp	Brooklyn, N. Y.
United States	M-4	Poertner Motor Car Co	New York City
Rainier	S-7	Rainier Motor Corp	New York City
Standard	B-1	A. Elliott Ranney Co	New York City
Reo	G-1	Reo Motor Car Co. of N. Y., Inc	New York City
Schacht	S-2	Schacht Motor Truck Co	New York City
Shaw Taxi	R-3	Walden W. Shaw Co., care Amer. Taxi. Co.	New York City
Grant	H-2	C. T. Silver Co	New York City
Federal	K-1	Morton W. Smith Co	New York City
Sterling	T-1	Sterling Motor Truck Co	New York City
Sullivan	R-7	Sullivan Motor Truck Corp	Rochester, N. Y.
Wilcox	S-5	Taylor Motors Corp	New York City
Signal	R-1	R. E. Taylor Corp	New York City
Troy Trailer	406-10	Troy Trailer Sales Co	New York City
Republic	R-4	W. J. B. Motor Truck Co	New York City
Ward La France	T-7	Ward La France Co	Elmira, N. Y.
Oneida	E-1	West Motor Co., Inc	New York City
Overland	M-7	Willys-Overland, Inc	New York City
Traffic	——	Traffic Truck Sales Co	Baltimore, Md.

ACCESSORY EXHIBITORS.

Space	Exhibitor	Address
374-5	American Pump and Tank Co	New York City
206	American Taximeter Co	New York City
294	American Traction Ring Co., Inc	White Plains
331-2	Chilton Co	Philadelphia, Pa.
320-1	Class Journal Co	New York City
380-1	Conserve Sales Co., Inc	New York City
264-5	Derf Mfg. Co	New York City
268-9	Dorr Miller Differential Co	New York City
393-6	Double Seal Ring Co	New York City
323-4	Eastern Rubber Co	Philadelphia, Pa.
305-A & B	Electric Storage Battery Co	New York City
364-5	Essenkay Products Co., care Amer. Tire Filler Corp	New York City
266-7	W. Hampton De Fontaine	New York City
384-7	Houpert Machine Co	New York City
203	Lane Brothers Co	Poughk'psie, N. Y.
431-37	Metropolitan Body Co	New York City
348-9	Motor	New York City
246-8	National Chain Co	New York City
272-7	Taft, Pierce Mfg. Co	Woonsocket, R. I.
226-7	M. Geo. Tigar Bearings Co	New York City
362-3	Union Truck Co	New York City
360-1	Victor Ford Transmission Mfrs	New York City
344-5	Ralph Waldt	New York City

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285-6.....West Steel Casting Co.....Cleveland, O.
295-6.....Joseph Dixon Crucible Co.....Jersey City, N. J.
242-5.....Gray & Davis, Inc.....Boston, Mass.
305-1.....Simms Magneto Co.....East Orange, N. J.
342-3.....Kenilworth Mfg. Co.....New York City
251-5.....Gates Rubber Co.....Denver, Col.
———.....Plunkett Shock Absorber.....Brooklyn, N. Y.

Additional Accessories.

407-8.....Automobile Journal Pub. Co.....Pawtucket, R. I.
364-5.....Edward G. Budd Mfg. Co.....Philadelphia, Pa.
362-3.....Budd Wheel Corp.....Philadelphia, Pa.
366-70.....Clark Equipment Co.....Buchanan, Mich.
303-B.....Bulls Eye Rubber Co.....L. I. C., N. Y.
304-A.....Globe Chemical Co.....New York City
278-80.....Dayton Steel Foundry Co.....Dayton, O.
346-7.....R. G. Granville, Inc.....New York City
307-8.....Lauraine Magneto Co., Inc.....New York City
460-1.....Lubriko Co.....Philadelphia, Pa.
339-40.....New York Rotary Motor Co.....New York City
337-8.....Rowe-Calk & Chain Co.....Plantsville, Conn.
371-2.....Charles D. Schmidt Co.....New York City
281-2.....Scott Corp.....Chicago, Ill.
312-14.....W. E. Townsend Co., Inc.....New York City
289-91.....Veeder Mfg. Co. (John T. Quinlan, Agent).....New York City
309-11.....Westinghouse Air Spring Co.....New York City

*Accessory lists not complete, as these are being added to daily.

NINETEENTH ANNUAL CHICAGO AUTOMOBILE SHOW.

Commercial Car Exhibits, Shown Feb. 3-6.

Truck	Building	Space	Truck	Building	Space
Acme	Coliseum	K-1	Lapeer	Coliseum	A-2
Auto Car	Coliseum	B-5	Master	Coliseum	B-3 & 4
Available	Annex	O-3	Maxwell	Coliseum	B-8
Brockway	Coliseum	F-5 & 6	Mutual	Coliseum	H-2
Bethlehem	Coliseum	E-3 & 4	Nash	Coliseum	C-2
Chevrolet	Coliseum	C-4	Oneida	Annex	M-1
Clydesdale	Coliseum	E-1 & 2	Paige	Coliseum	D-6
Couple-Gear	Coliseum	H-3	Pierce-Arrow	Coliseum	C-3
Dodge	Coliseum	B-7	Panhard	Coliseum	G-3 & 4
Dearborn	Coliseum	A-1	Patriot	Coliseum	H-1
Dorris	Coliseum	G-2	Republic	Coliseum	B-1 & 2
Diamond T	Coliseum	F-1 & 2	Riker	Coliseum	B-6
Four Wheel Drive	Coliseum	F-3 & 4	Reo	Coliseum	A-4 & 5
Federal	Coliseum	A-6 & 7	Sandow	Coliseum	A-3
Fordson (tractor)	Annex	O-3	Sanford	Coliseum	G-1
Fulton	Annex	N-1	Service	Coliseum	D-7 & 8
Graham	Coliseum	F-7 & 8	Truxton	Coliseum	L-1
Garford	Coliseum	D-3 & 4	Tower	Annex	O-1 & 2
Gary	Coliseum	H-4	Velie	Coliseum	C-1
G. M. C	Coliseum	D-1 & 2	Walker	Coliseum	C-7
Indiana	Coliseum	C-5 & 6	Winslow	Coliseum	J-1
Kissel	Coliseum	D-5			

ACCESSORY EXHIBITORS.

Ahlberg Bearing Co.	Chicago, Ill.	Coliseum	78
Alemite Die Casting and Mfg. Co.	Chicago, Ill.	Coliseum	18
American Bronze Corp.	Berwyn, Pa.	Coliseum	51
American Chain Co., Inc.	Bridgeport, Conn.	Coliseum	55
American Taximeter Co.	Chicago, Ill.	Coliseum	23
Anderson Forge and Machine Co.	Detroit, Mich.	Coliseum	47
Arrow Grip Manufacturing Co.	Glens Falls, N. Y.	Coliseum	86
Buda Co.	Harvey, Ill.	Coliseum	33-34
Budd Wheel Corp.	Philadelphia, Pa.	Coliseum	50
Buell Manufacturing Co.	Chicago, Ill.	Annex	107
Challoner Co.	Oshkosh, Wis.	Coliseum	72
Champion Ignition Co.	Flint, Mich.	Coliseum	41
Chicago Manufacturing Co.	Chicago, Ill.	Coliseum	5
Chilton Co.	Philadelphia, Pa.	Coliseum	8
Clark Equipment Co.	Buchanan, Mich.	Coliseum	45-6
Class Journal Co.	Chicago, Ill.	Coliseum	2-3
Corbin Screw Corporation	New Britain, Conn.	Coliseum	85
Dixon, Jos., Crucible Co.	Jersey City, N. J.	Coliseum	61 & 68
Electric Storage Battery Co.	Philadelphia, Pa.	Coliseum	42-43
Hassler, Robert H., Inc.	Indianapolis, Ind.	Annex	103
Inland Machine Works	St. Louis, Mo.	Coliseum	71
Morand Bros.-Martin Cushion Wheel Co.	Chicago, Ill.	Coliseum	96
Motor and Accessory Mfrs. Assn.	New York City	Coliseum	77

the show, its use not being restricted to any one day. This is a privilege that was never entertained by the management of previous shows and it is granted with the belief that any person seriously considering buying should have all the time that is desirable for seeing the exhibits, and the show is much too large to be seen in any one day unless done with the intention of viewing only certain displays.

The buildings will be handsomely decorated, the work at the Garden being in charge of M. A. Singer and at the Armory in charge of Joseph St. Petrie. Many changes are necessary in arrangement of the balconies and floors to have the display stands accessible. The decorating will not be spectacular, but it will be in every way pleasing and no doubt satisfactory settings for both cars and trucks. There will be the customary band and orchestral programmes of music during the afternoon and evening of each day.

Show Organized by a Committee.

The committee arranging the show for the Automobile Dealers' Association of New York consists of Charles H. Larson, chairman, Cutting-Larson Co. (Oldsmobile); R. J. Gilmore, Packard Motor Car Co. of New York (Packard); Walter Wood, Van Cortland Vehicle Co. (Peerless); William C. Poertner, Poertner Motor Car Co. (National); Harry J. DeBear, Maxwell Motor Sales Co. (Maxwell). With this committee is associated William M. Sweet of the executive committee of the Motor and Accessory Manufacturers' Association. This committee has been extremely active and energetic and so far as the show from the viewpoint of the public is concerned, there will be nothing lacking because of the extremely limited time for preparation.

Statement should be made that despite the fact that the dealers of New York took over the show there is no antagonism on the part of the National Automobile Chamber of Commerce, which appointed a committee consisting of C. C. Hanch, J. Walter Drake and Samuel A. Miles, to confer with the New York and Chicago dealers' associations, and there has been ample manifestation of cooperation. Besides this the Motor and Accessory Manufacturers' Association formally sanctioned these shows.

Special Features of Show Weeks.

There is reason to expect a very large attendance of those engaged in or identified with the industry, for there will be the winter meeting of the Society of Automotive Engineers held in New York City, Feb. 4-6, with a "Victory" dinner at the Hotel Astor the evening of the final day. There will be a meeting of the eastern members of the National Automobile Dealers' Association, an organization that has upwards of 4500 members, and is becoming more and more important. There will be a dinner given in honor of Capt. E. V. Rickenbacker, who is the leading aerial "ace" of the American army, which will take place at the Waldorf-Astoria the evening of Feb. 3, and which will be jointly participated in by the American Automobile Association, the Society of Automotive Engineers, the National Automobile Chamber of Commerce, the Motor

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National Refining Co.	Chicago, Ill.	Coliseum	17
Pantosote Co.	11 Broadway, N. Y. C.	Coliseum	52
Parry Manufacturing Co.	Indianapolis, Ind.	Coliseum	79 to 82
Pratt, William E., Manufacturing Co.	Chicago, Ill.	Coliseum	83
Rowe, Calk and Chain Co.	Hartford, Conn.	Coliseum	65
Sewell Cushion Wheel Co.	Detroit, Mich.	Coliseum	64
Sherman & Ellis, Inc.	Chicago, Ill.	Coliseum	13
Simms Magneto Co.	East Orange, N. J.	Coliseum	44
Sparks-Withington Co.	Jackson, Mich.	Annex	103 to 117
Splitdorf Electrical Co.	Newark, N. J.	C'seum	59-60 69-70
Stromberg Motor Devices Co.	Chicago, Ill.	Coliseum	57-8
Taft-Pierce Mfg. Co.	Woonsocket, R. I.	Coliseum	39-40
Titeflex Motor Hose Corp.	Newark, N. J.	Coliseum	76
Trindl Machine Works	Chicago, Ill.	Coliseum	7
Tuthill Spring Co.	Chicago, Ill.	Coliseum	14
Vesta Accumulator Co.	Chicago, Ill.	Coliseum	92-3
West Steel Casting Co.	Cleveland, O.	Coliseum	74
Wheeler-Schebler Carburetor Co.	Indianapolis, Ind.	Coliseum	22 & 32
Williams, J. H. Co.	Brooklyn, N. Y.	Coliseum	49

and Accessories Manufacturers' Association, the Automobile Club of America, the Motor Club of New York and various aeronautic clubs. The toastmaster will be Congressman Clifford Ireland, a member of the contest board of the American Automobile Association.

There will be numerous conferences and meetings in addition to the fixtures that have been specified and during the truck show there will be a conference of truck manufacturers which may have important bearing on the future of the industry, so far as this can be determined by any organization. The truck manufacturers' meeting will be under the auspices of the National Automobile Chamber of Commerce.

Exhibits Greatly Varied and Many.

The prospects for the exhibition of trucks is maintained to be exceptional. The original plans for the show have been amended to meet demands for display space, and statement is made that the number of exhibitors will be the largest ever seen together at any one time. There will be trucks of all makes, types and sizes, ranging in capacity from 800 pounds to 15,000 pounds. There will be road tractors all kinds and of various power ratings, which will have semi-trailer and trailer equipment. There will be innumerable standard and special bodies with quick discharging equipment, both manually and power operated, and, of course, bodies designed for general and specific work.

The list of exhibitors of trucks, tractors, conversion units, etc., although not complete, shows a total of 52, which includes a number built by concerns that have recently begun production, among these being the Graham, manufactured by Graham Bros., Evansville, Ind.; the Paige, made by the Paige Motor Car Co., Detroit; the Shaw Taxi, made by the Walden W. Shaw Co., Chicago; the Ward La France, made by the Ward La France Co., Elmira, N. Y.; the Traffic and the Warren trucks. Another machine that has not been seen in the East is the Lapeer tractor, designed for use with semi-trailers and trailers. The Nash "Quad" will be the only four-wheel driven truck exhibited, and the Troy Trailer Co.'s agent will display a series of these units. The Jaxon Steel Products Co., Detroit, will show a truck equipped with Jaxon wheels, which are claimed to be extremely efficient, and there will be one or more Fordson tractors shown. The Holt Manufacturing Co., Peoria, Ill., will also show a gasoline locomotive.



Samuel A. Miles, Manager of the Show of the Chicago Automobile Trade Association.

The number of accessory exhibitors shown in the accompanying list is far from complete, and it shows a total of 47, which will probably be at least doubled.

THE CHICAGO EXHIBITION.

The Chicago exhibition will take place at the Coliseum and Annex, and the First Regiment Armory, this following the plan that has been the vogue for years in that city, and it will be under the auspices of the Chicago Automobile Trade Association and the management of Samuel A. Miles. Mr. Miles, having for years managed the Chicago shows, was appealed to by the show committee of the association and he undertook to do in weeks what had previously been accomplished in months with a well trained organization.

Fortunately Mr. Miles was able to gather practically all of his own staff of employees and by resorting to extraordinary means for distributing applications for space and by the cooperation of the Motor and Accessory Manufacturers' Association the returns were obtained very quickly and in sufficient numbers to justify reasonable success. The publicity campaign was very productive and this brought in a large number of applications, so that there is every reason to believe that the Chicago show will be at least as large and quite as interesting and attractive as in former years. There was even no obstacle as regards decorations, for the association was able to take over what had been prepared for the show previous to the action of the National Automobile Chamber of Commerce, and so far as decorations are concerned the show will have what was originally intended for it.

The exhibition is announced to be the 19th annual Chicago show, and it will have all the usual features and the arrangements as to details will be practically unchanged. The passenger car show will have probably close to 80 different makes of machines, the incomplete list showing 69 exhibitors, and with the cars will be a large number of accessory, supply and equipment displays. The incomplete total of accessory exhibitors is 107, and there is every reason to believe that this will be increased 50 per cent. and 100 per cent. is by no means improbable.

The passenger car show will be opened Jan. 25 and will be concluded Feb. 1. The truck show will be opened Feb. 3 and end Feb. 6. The trucks will be shown in the Coliseum and the Coliseum Annex, this bringing this division under one roof.

The incomplete list of truck exhibitors shows a total of 43 makes, including the Fordson tractor and the Couple-Gear and Walker electric trucks. The Lapeer road tractor will be exhibited and there will be Nash and F-W-D four-wheel driven trucks. There will be a number of trucks of comparatively recent production, which include the "twin-frame" Panhard, the Graham, Mutual, Paige, Patroit, Tower and Winslow.

The number of accessories exhibitors accredited to the truck show, with many applications pending decision, is 42, and there is reason to expect that this will be increased to approximately 100. One will note that the Chicago truck division will be very much larger than any show previously held in America, and that the Coliseum will not be too large for it.

During the show there will be meetings of the National Automobile Dealers' Association, the Chicago section of the S. A. E. and a meeting of the Motor and Accessory Manufacturers' Association. The National Automobile Dealers' Association will hold its annual meeting Jan. 28-29 and will elect officers. This will probably be the most important gathering of the organization of the year. Partial lists of truck and truck accessory exhibitors are shown on these pages.

GOODYEAR HONOR ROLL.

Names of 70 men who gave their lives for their country appear on the honor roll of the Goodyear Tire and Rubber Co., Akron, O. A little better than one per cent. of the men who joined the colors from this big plant made the supreme sacrifice.

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DUPLEX TRUCK CO. HAS SURPLUS OF $212,488.38.

The Duplex Truck Co., Lansing, Mich., has had a profitable year, as shown by the second annual balance sheet for the year ending Oct. 31, 1918. The statement shows a surplus of $212,488.38. Cash on hand and in banks is given at $38,512.18, an increase of $9891.09 over the previous year. Total capital investment is given at $745,355.99. Current liabilities amount to $48,939.89.

The only change in directors was due to the withdrawal of H. E. Bradner, who retires for an indefinite period because of ill health.

President H. M. Lee in his report to the stockholders said in part:

"Our greatest market, the road building field, will expand next year to an unprecedented degree. The entire country is whole heartedly back of the movement for highway improvement, and now that the field is free from restrictions, plans are under way that will lead to the construction and improvement of thousands of miles of roads throughout the country during the coming 12 months.

"The future of the export business looks particularly bright. The release of ships from war work, together with the production of new ships, will provide the tonnage needed to reduce shipping rates which have been the bugbear of the export business for the past two years. Business in large volume has accumulated abroad ever since the rates so decidedly advanced, and it is awaiting only a fair reduction of rates to flood into this country in quantities hitherto unknown to us."

WISCONSIN BODY CO. A NEW ENTERPRISE.

The Wisconsin Body and Sales Co., Milwaukee, has been incorporated with a capital stock of $15,000 to manufacture motor car and truck bodies for the commercial and custom trade. W. A. Rosenwald, G. Steger and B. M. Rosenwald are the incorporators.

Rural Motor Express Service Boon to Farmers

Rural America is being linked up with the rest of the world by the Rural Motor Express. These individual lines, operating from 15 to 100 miles, are gradually forming into a transportation system which, when connected, will spread over the entire United States. All sections present splendid opportunities for Rural Motor Express systems.

Reports received by the Rural Motor Express Committee of the National Automobile Chamber of Commerce show how profitable a rural motor express line can be made, if operated right. The rural express, being a war innovation, coming after the fashion of other necessities, is here to stay, and to do its part in feeding the world and in building a greater United States.

A majority of the lines now in operation are not in competition with the railroads, but serve sections that have never been served except by horse and wagon, but where they do compete there has been found that there is business enough for both.

The Highways Motor Transport Co., Cleveland, O., with 10 six-ton Packard trucks, has been operating rural motor express lines out of Cleveland to Sandusky on the west and Ashtabula on the east, taking in all way stations. When fruits and vegetables began to come in these trucks transported the following: 20,000 crates of berries, 25,000 bushels of tomatoes, 20,000 bushels of apples, peaches and beans.

This company during the grape season hauled 84,000 baskets of grapes, part of which went to the wine presses and part to the markets. Seven hundred baskets were carried to the load, which made 120 truck loads of grapes alone. The average hauling distance of these grapes was 37½ miles and the charge was approximately $7 per ton, and the loads hauled approximated seven tons. On the return trip empty baskets were hauled. The round trips of each of these trucks brought in about $77. Troy trailers, of which the company has two five-toners, were used in some cases.

The farmers, used to rail haulage, which usually resulted in considerable loss, were amazed at the fact that out of the thousands of fruits and vegetables hauled by the motor line not a single basket was damaged or broken open.

In the winter months a steady flow of winter vegetables, such as mangoes, onions, apples and cabbage, will be hauled.

At Johnstown, Pa., Charles Schenkmeyer & Sons hauls potatoes 35 miles over mountain roads. The motor trucks are hauling 115 bushels to the load in a little over three hours. It formerly required more than a day to haul that number of bushels, and required at least two two-horse wagons.

The Highways Motors Transportation Co., Spokane, Wash., is incorporated for $100,000, all paid in. It was organized by leading business men of that city. It is using 16 large Selden trucks, and is operating over nine different routes. The company has all the business it can handle.

The Automobile Transports, Ltd., with a capital of $300,000, is operating out of Toronto on the west and Hamilton and Buffalo on the south, taking in all way stations. Warehouses are located in principal centers. The company expects to make a clean profit of $100,000 on the first year's business.



The Plant of the International Motor Co., at Allentown, Pa., in Which a Considerable Number of Women Have Been Employed Doing Machine Work Necessary in Building Mack Trucks.

WANT CANADIAN WAR TAX REMOVED.

Representatives of the organized automobile industries of Canada recently waited on Sir Thomas White, acting prime minister of trade and commerce, and urged that the excise war tax on automobiles be removed.

The tax was imposed in the last budget and amounts to 10 per cent. on automobiles. It is applicable to all imported into or manufactured in Canada and unsold on April 30, 1918.

CONNECTICUT JITNEYS MUST PASS STATE INSPECTION.

Inspectors from the office of the Commissioner of Motor Vehicles in Connecticut will examine all cars for which jitney and public service vehicle licenses are asked. There are about 3000 such cars. Many of them are on the verge of the junk pile, but the owners insist upon keeping them in service.

COMET CO. GETS ORDERS FOR FOREIGN DELIVERY.

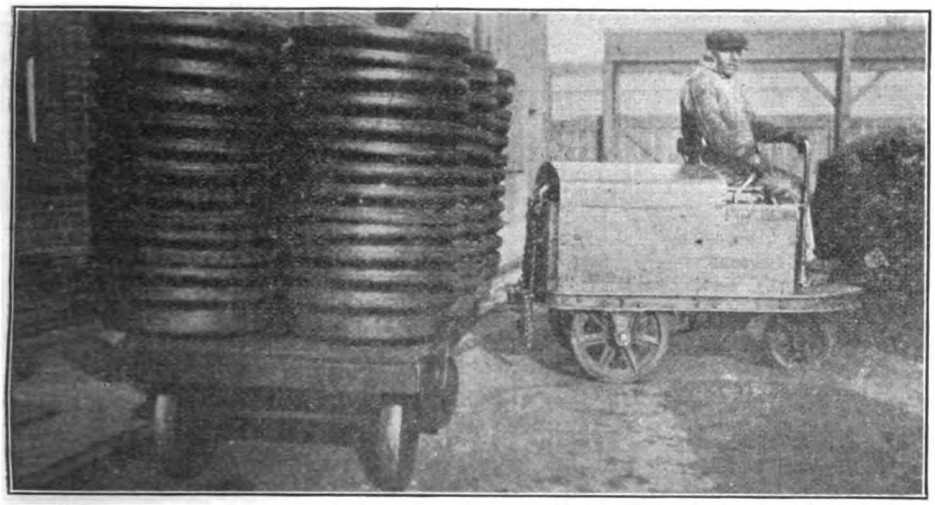
An order for 75 two-ton trucks from Switzerland and one for 25 two-ton trucks from Italy have been received by the Comet Automobile Co., Decatur, Ill. The company has been engaged in the manufacture of motor trucks for some months. All government contracts have been completed.

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INTER-FACTORY TRACTOR SERVICE

American Pulley Co., Philadelphia, Pa., Utilizes 250 Trailers in Its Various Departments and Greatly Economizes Labor

By K. H. Lansing.



Tractor Hauling a Trailer Loaded with Pressed Steel Pulleys Across the Yard, the Haulage Being Done on Concrete Paving.

"SUCCESSFUL manufacturing, under the highly competitive conditions of today, is largely a matter of getting the most out of machines."

So says a brochure on "Getting Maximum Pulley Efficiency," compiled by the American Pulley Co. of Philadelphia, and in that brief, but comprehensive statement, this concern has struck its own keynote.

The American Pulley Co. is practising what it preaches. While it is pointing out in its office literature the best means of getting the most out of its product, it is using that very principle, "Get the most out of your machines," in its own plant and yards.

For instance: The company recognized that the operations of industrial plants often are unnecessarily handicapped because the haulage departments are not on a par with the other departments. It recognized, too, that such a lack of efficiency in so vital a factor in completeness and in speed of output holds back entire plant operations and reduces capacity. Specifically, by the installation of Mercury industrial tractors, known as "the trackless train," the company not only has been able to relieve congestion, increase capacity and reduce cost in a hundred and one ways through the manifold capabilities of these machines, but actually to dispense with a yard gang of eight men.

Plant Consists of 28 Buildings.

The main office and works of the American Pulley Co. are at 4200 Wissahickon avenue, Philadelphia, and there are branch warehouses at Grand and Greene streets, New York; 124 South Clinton street, Chicago, and 165 Pearl street, Boston. The product of the company consists for the most part of "American" steel split belt pulleys, "American" metal sash pulleys, pressed steel car wheels, pressed steel spools, reels, beams, spool heads, reel heads, flat and flanged metal discs and metal stampings. There are 28 buildings in the main group, the actual area over which the industrial tractors operate being approximately 200,000 square feet.

The arrangement is favorable in every way for just such an installation of industrial haulage equipment. Press operations are run through the factory in large quantities, so, of course, there is always a big reserve over and above immediate orders. These extra parts thus produced are taken by trackless train from the press room to the parts bins in the storehouse and there stored, usually, however, a certain number being removed in like manner to the yards and there retained in trailers not needed immediately until they can be used. Parts that are to be employed in filling immediate orders are conveyed by the tractor-trailer method to the assembling room.

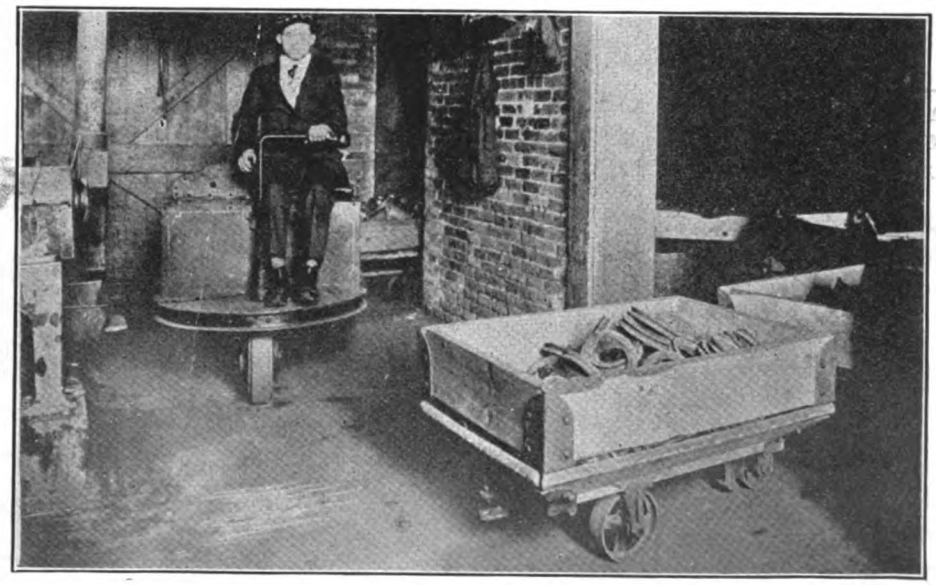
Before the industrial tractors were installed it took a yard gang of 12 men, in addition to the yard boss, to store parts. Now there are only two tractor operators and two laborers on the job.

Has 250 Three-Ton Trailers.

The company has 250 trailers, each having a capacity of about three tons. The trailers are made of steel and naturally are very heavy. Before the tractor-trailer method was used, when one of these was loaded to its full capacity, it would take from four to five men to move it about, slowly and laboriously, even under favorable weather conditions. In wet or wintry weather, sometimes half a dozen men would pull and shove. In the tractor-trailer method all this extra time and energy are saved. The only restriction on operation under these conditions is the capacity of the power unit and the surfaces over which the train of tractor and trailers must travel—hence the name "trackless train."

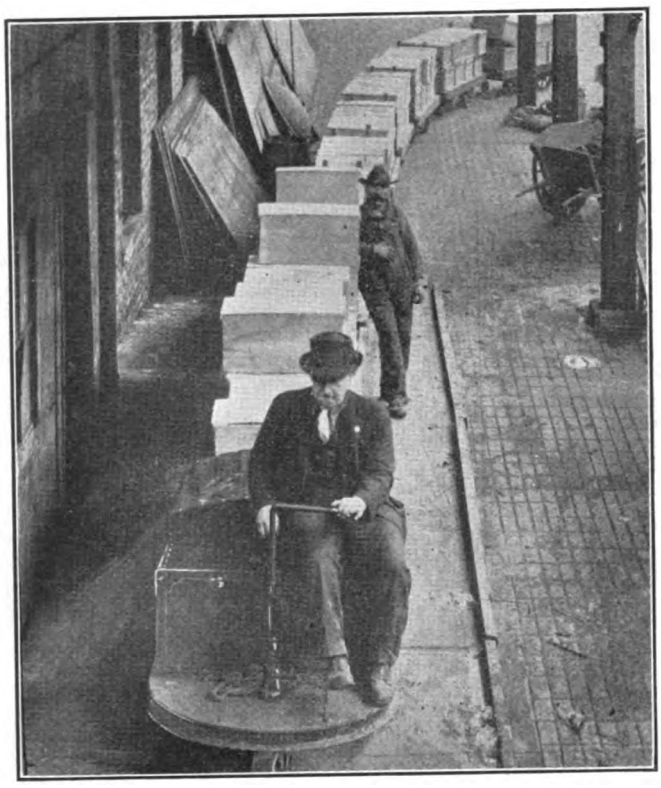
Before the company decided to put in the industrial tractor system, investigation of the proposition showed that the Mercury unit possesses compactness—its length over all is only 71 inches, its width over all is 39 inches, it has a wheelbase of 40½ inches, a turning radius of 57 inches, and a height, from the floor to the top of the driver's seat, of 38 inches. Its speed is from one to eight miles an hour and its weight, equipped with lead battery, 2220 pounds, and with Edison battery, 1950 pounds.

The lead battery is a 16 cell, 17 plate Ironclad Exide and the Edison, in use at the American Pulley Co.'s plant, is equipped with 30 A-6 cells. The battery is held on a special cradle, supported by four sets of double coil springs, which



Hauling a Train of Trailers Through Doo rs and Passages, and Turning Around in Almost a Complete Circle with Certainty of Control.

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Demonstrating Flexibility, the Tracks of the Tractor and the Last Trailer Varying but Little in a Long Train.

absorb all upward and downward shocks.

Tractor Batteries Easily Removable.

The battery is so easily removable and can be used in such a variety of ways that it recently occurred to men about the plant to try a "stunt" with it. One of the company's Packard motor trucks was to be used in the Fourth Liberty Loan Parade in Philadelphia. It was decided to employ it as a sort of patriotic and advertising float, bearing the national colors and an illuminated sign. There was considerable puzzling over a satisfactory means of lighting this sign from the interior that at the same time would be safe on a gasoline truck, until one of the men suggested using the easily portable Edison battery in one of the industrial tractors. The result was thoroughly pleasing.

As the bulk of the tractors' work is done in the day time—although one of them frequently is used at night—they are charged in the engine room of the plant at night, at the rate of 45 amperes for a seven-hour working day.

There are various types of Mercury Industrial Tractor manufactured by the Mercury Manufacturing Co. of 4118 South Halsted street, Chicago, but here are the general specifications, applying, of course, to the tractors used by the American Pulley Co.

Brief Tractor Specifications.

Single piece, three-inch channel iron frame, riveted and welded at the rear, thoroughly braced and strong and rigid in construction. The motor is a Westinghouse, 32-volt, with 200 per cent. overload capacity, of the heavy duty type, ball bearings throughout and easily accessible without the use of tools.

The controller used is known as a "Mercury special" and has three speeds forward and two reverse. It is self-locking.

The tractor is equipped with safety devices to meet the approval of expert safety engineers.

The wiring is of the single unit type and almost as easily removable as the batteries. Worn wires and resultant short circuits are eliminated.

The drive is direct from motor to rear axle through a highly refined worm gear.

The bearings on wheels and axles are Bower roller bearings and the drive shaft is on imported ball bearings.

The two driving wheels are 20½ inches in diameter and equipped with 3½-inch solid rubber tires. The single steering wheel is 15 inches in diameter and also equipped with a 3½-inch solid rubber tire. This wheel is supported by a steel fork mounted on cup and cone ball bearings and is turned by a simple hand lever directly attached. There are no gears, no drag links. The axles are made of heat treated steel.

The controller, brake, charging plug and switch, all wiring and the motor are exposed by raising the two-hinged seats.

Operating Cost Is Low.

And here is the operating cost as presented: Less than $2 a day for entire operation, including depreciation of 20 per cent. per annum on chassis; chassis maintenance, battery maintenance and renewal and current at three cents per kilowatt hour.

"We are getting notably good service from the local agents," said a member of the company. "No large replacements on the tractors have been necessary and no parts have been shown to be defective. The oldest tractor we have is two years old and in that time the repair expense has been limited chiefly to a new set of tires."

It is pointed out that the operation of the industrial tractor power unit is simple in the extreme and one of its big advantages is that it can be used efficiently in narrow aisles and congested places. One of the Mercury tractors can be run into a box car and turned around inside. A tractor with a string of loaded trailers, 15 in number, time and again has made a right angle turn in comparatively narrow aisles without raking the walls, or overtracking, the difference between the track left by the tractor and that left by the last trailer varying only by inches. This is a degree of utility with which a manufacturer can obtain high efficiency in conditions of congestion, have ample capacity at minimum haulage expense.

Success Depends on Three Factors.

The successful operation of a trackless train system depends on three factors:

Obtaining a tractor which is a tractor in the truest sense of the word; a machine built exclusively for tractor work.

Providing a proper trailer equipment.

Adherence to a few simple rules of operation.

As regards the first requisite, about everything that can be stated without naming any particular type of tractor—and there are a number—is comprehended in the statement given.

As regards proper trailer equipment, it may be said that the great majority of hand trucks in use can be so arranged, with a few minor changes in construction, that they will trail in a train and give reasonably satisfactory service; but the most effective service can be obtained with trailers built on the principles of the tractor—that is, for the specific re-



The Utility of the Electric Tractor Is Proven by It Pushing a Snow Plow Around the Works to Clear the Yard and Walks.

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quirements of tractor-trailer operations.

As to having operating rules and sticking to them, an instance is shown in the American Pulley Co.'s keeping its reserve parts that may soon be used, on wheels, thus saving rehandling. Another point is to keep the tractors busy, as any motor machine when idle costs money. Still another point to be observed is using reasonable care in the operation of the tractors and in reloading the trailers.

If these rules and a few others, similar in nature, are given a reasonable amount of attention, trackless train operation, say those who are using it successfully, will surely proves economical and expeditious.

Carrying no load itself, the industrial tractor can be operated almost continuously. It is never necessary, during working hours, for the tractor to remain idle while loads are being put on or taken off. The tractor is designed and built for one particular purpose—that of pulling or pushing a load.

When a train of trailers is delivered at its destination, the tractor, its immediate work finished, is then uncoupled and can be coupled to another train. The result of such flexibility and efficiency is a greater haulage capacity than could be obtained with any other equipment, and measured either by time, labor and through this increase of work the cost money is largely decreased.



Only One Man Is Required, No Matter What the Work, and the Tractor Can Be Driven to Eight Miles an Hour if Lightly Loaded.

The general utility of a tractor train is not limited to any specified work in any specific plant. Such equipment has been found just as productive and economical in one plant as another and for one work as another. The length of the haul, whether it be long or short; the kind of material, whether it be light or heavy; the condition of the plant where the work is being done, whether it be congested, or with side aisles, do not materially affect tractor-train operation, and there are comparatively few places where it cannot be used to maximum advantage and with resultant improvement in service. It is only in the last few years that the tractor-trailer method for industrial haulage has been perfected and its acceptance by industry in many phases is the best proof of its high efficiency and of the need for such a method.

Some Unusual Work Well Done.

In addition to the regular work about the plant that is done with the American Pulley Co.'s tractor-trailer equipment, many works, for which it is not designed, are satisfactorily accomplished. With a fairly large snow plow fastened in front, one of the tractors is used to clear the walks and roadways all about the plant.

The tractors are used to haul ashes from the boiler room to the dump.

They are utilized for moving heavy machinery from freight cars at the company's stone and concrete siding platform in its freight yard when new installations are being made.

Tractors have been used to move a 10-ton press frame on trailers, one pulling and the other pushing.

Tractors have hauled two wooden sheds for parts a considerable distance into the yards, each shed being 20 feet long, six feet wide and four feet high. For this work chains were attached to the tractors and sheds.

They are used to haul steel bars from a neighboring plant over a rough dirt road, sometimes a special six-ton trailer, or cart carrying the load.

Occasionally a tractor has been used to hoist heavy machinery with a block tackle, this being a work for which animals or power vehicles are frequently used.

Most unused of all, perhaps, is the occasional use of a tractor to pull a horse team and wagon or cart from mud, or from holes in which they may have become immovable, and for releasing motor trucks that are uncontrollable because of loss of traction. To extricate teams, the usual method is to attach the tractor to the wagon or cart pole and pull, and when a fair start has been made to detach the tractor and then drive it behind the vehicle, "shouldering" or pushing with full power until it is out of the hole or mire.

That the tractors may be in condition to accomplish all that is claimed for them —and then some—without leaving it all to the purchaser, the Edison Storage Battery Co. sends an inspector to examine the batteries four times a year where Edison cells are used.

A point that is accentuated when instructing a customer, is not to place too much confidence in automatic charging devices. If automatic equipment for stopping and starting a charge without attendants is used, it should be made certain the user understands that the charging apparatus sometimes fails and to insure efficiency it must be kept in good mechanical condition.

In some plants where the trackless train is used it is nicknamed the "potato bug," because of its neat, yet stubby appearance and steadily crawling mode of locomotion. The word "crawling," however is not used in the technical sense, for the gasoline driven "crawler" is a totally different type.

How the industrial tractor system is regarded by other big business enterprises may be realized from a glance at the names of a few of the users: The Pennsylvania Railroad Co., at piers four and five in New York City, where it is admitted that this method has increased the freight handling capacity by 33 1/3 per cent; the Chicago Junction Railroad, Chicago, which asserts that the saving effected by the trackless train has amounted to $22,536 per year, and the Standard Malleable Iron Co. of Muskegon, Mich., where it has relieved congestion and greatly cut haulage costs.

But the savings by use of the trackless train cannot always be definitely figured, for with improvements in methods employed the saving mounts. Yet the economy and efficiency of the tractor is certain, its utility and capacity for greater work is undoubted, and its saving of labor and time has been repeatedly proved.

PHILADELPHIA GARAGE MEN TO BANQUET.

The first annual banquet of the Philadelphia Garage Association will take place at the Hotel Adelphia on the night of Feb. 12. Guests will include representatives of allied trades, among them members of the Atlantic Refining Co., the Crew-Levick Co., the Gulf Refining Co. and other big oil companies.

At the next meeting of the association a committee will be appointed to draft a new bill to be presented to the Legislature, designed to protect garage men in Pennsylvania in various ways. The garage men are determined to eliminate the "dead beats" who have their cars stored and repaired, run up big bills and suddenly disappear without paying.

Individual members have in many cases raised the price of live and dead storage and repairing from 50 cents to as much as $2 or $3, because of the high cost of labor and materials.

ALLIS-CHALMERS CO. PRODUCING A NEW TRACTOR.

With a tractor listing at $790, the Allis-Chalmers Co., Milwaukee, has entered the market. The company has been building a 10-18 tractor for several years, and the series has been enlarged to include the new 6-12 type, known as the "Allis-Chalmers General Purpose Tractor," and also a 15-30 model.

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BATENBURG RESIGNS AS CHIEF ENGINEER OF F. W. D.

P. J. F. Batenburg has resigned his position with the Four Wheel Drive Auto Co., Clintonville, Wis. He had been associated with the company as chief engineer and designer for the last eight years, having been largely responsible for the phenomenal success and rapid growth of the F. W. D. Co. He insists that he has not as yet made any other connections.

Mr. Batenburg contributed greatly to the Allied cause, and his work was well appreciated by the different governments of the Allied powers. His service was greater than probably is appreciated outside of the war capitals of the Allied countries.

Mr. Batenburg is the designer of the famous F-W-D truck and is well known



P. J. F. Batenburg, Designer of F-W-D Trucks, Who Has Resigned as Chief Engineer of the Four Wheel Drive Auto Co., Clintonville, Wis.

in this country and Europe as one of the most successful truck and tractor engineers of the present time. He is America's first successful four-wheel drive designer, with a wonderful record.

He has a pleasing personality and is known for his keen insight into the future of the truck industry.

LINDEMAN IS FIRESTONE HEAD IN NEW ENGLAND.

C. B. Lindeman and J. E Mayles have been sent from the factory of the Firestone Tire and Rubber Co., Akron, O., to take charge of the New England district. Mayles becomes Boston zone manager and Lindeman will have direct charge of the whole New England district. J. T. Clinton, formerly in charge of the district, has resigned. Edward S. Babcock, factory advertising manager for six years, has resigned to go to the Christian Herald, New York.

The Oldsmobile Co. of Washington, 1202 First avenue, Spokane, is handling the Federal truck.

Truck and Car Shows Determined and Projected

Shreveport, La., Shreveport Automobile Dealers' Association. Jan. 20-25.

Poughkeepsie, N. Y., Poughkeepsie Automobile Club. Jan. 20-25.

Milwaukee, Wis., 11th annual exhibition of the Milwaukee Automobile Dealers, Inc., Auditorium. Bart J. Ruddle, manager, Jan. 24-30.

Chicago, Ill., Cars, Coliseum and Armory, Chicago Automobile Trade Association. Jan. 25-Feb. 1.

Toledo, O., 11th annual show, Terminal Auditorium. Hugo V. Buelow, manager, Jan. 27-Feb. 1.

Chicago, Ill., Trucks, Coliseum, Chicago Trade Association. Feb. 3-6.

New York, N. Y., Cars, Madison Square Garden and 69th Regiment Armory. New York Automobile Dealers' Association. Charles A. Stewart, manager, Hotel Woodward, Broadway and 55th street. Feb. 1-8.

New York, N. Y., Trucks, Madison Square Garden and 69th Regiment Armory, New York Dealers' Association. Charles A. Stewart, manager, Hotel Woodward, Broadway and 55th street. Feb. 10-15.

Fargo, N. D., North Dakota Automobile Dealers' Association, Auditorium. Feb. 5-8.

Rochester, N. Y., Rochester Auto Trade Association, George C. Donahue, manager, Feb. 10-15.

Cleveland, O., Cleveland Automobile Dealers' Association, Wigmore Coliseum. Fred H. Caley, manager. Feb. 15-22.

Albany, N. Y., Albany Automobile Dealers' Association, Armory. Feb. 15-22.

Louisville, Ky., Louisville Auto Dealers' Association, Feb. 17-22.

Newark, N. J., New Jersey Auto Exhibition Co., Claude Holgate, manager. Feb. 15-22.

Minneapolis, Minn., Northwestern Automotive Exposition, Overland building, Walter B. Wilmot, manager. Feb. 15-22.

Des Moines, Ia., 10th annual, Ford building, Des Moines Automobile Dealers' Association, C. G. Van Vliet, manager. Feb. 17-22.

Pittsfield, Mass.; Pittsfield Automobile Show, State Armory, James J. Callahan, manager. Feb. 17-22.

South Bethlehem, Pa., Lehigh Valley Auto Shows Co., J. J. Elliott, manager, passenger cars, Feb. 17-24; trucks, Feb. 24-27.

St. Louis, Mo., St. Louis Auto Manufacturers and Dealers' Association, Robert E. Lee, manager. Feb. 17-22.

Cedar Rapids, Ia., Automobile Dealers' Association, Auditorium. Feb. 23-March 1.

Kansas City, Mo., Kansas City Motor Dealers' Association, E. E. Peake, manager. Feb. 24-March 1.

Springfield, O., Springfield Automobile Dealers' Association, Municipal Auditorium. Feb. 24-March 1.

Duluth, Minn., Duluth Automobile Dealers' Association, Armory, William F. Daly. Feb. 25-28.

Columbus, O., known as Victory Show, Memorial building, W. W. Freeman, manager. March 3.

Grand Rapids, Mich., Grand Rapids Automobile Business Association, E. T. Conlon, manager. February, date not determined.

Philadelphia, Pa., Philadelphia Automobile Trade Association, A. E. Maltby, manager. Passenger car show followed by truck show, March, date not determined.

Detroit, Detroit Automobile Dealers' Association, Crosstown Garage, H. H. Shuart, manager. March 1-8.

Buffalo, N. Y., Buffalo Automobile Dealers' Association. March 3-8.

San Francisco, Cal., Motor Car Dealers' Association, G. A. Wahlgreen, manager. March 1-10.

Syracuse, N. Y., Syracuse Automobile Dealers' Association, Harry T. Gardner, manager. March 10-15.

Omaha, Neb., 14th annual, Omaha Automobile Trade Association, Auditorium, Clarke G. Powell, manager. March 10-15.

St. Joseph, Ia., St. Joseph's Motor Car Dealers' Association. March 12-19.

Boston, Mass., Boston Automobile Dealers' Association, Chester I. Campbell, manager. March 15-22.

Brooklyn, N. Y., Brooklyn Motor Vehicle Dealers' Association, I. C. Kirkham, manager. March 22-29; trucks, April 1-5.

Trenton, N. J., Trenton Auto Trade Association, John L. Brock, manager, March 17-22.

Great Falls, Mont., Montana Automobile Distributors' Association. March, date not determined.

Pittsburgh, Pa., Automobile Dealers' Association of Pittsburgh, John J. Bell, manager. March 22-29.

Utica, N. Y., Utica Motor Dealers' Association, W. W. Garrabrant, manager. March, date not determined.

Bridgeport, Conn., Auspices of City Battalion, B. B. Steibler, manager. Date not determined.

Hartford, Conn., Hartford Automobile Dealers' Association. Date not determined.

Harrisburg, Pa., Harrisburg Motor Dealers' Association, J. Clyde Myton, manager. Date not determined.

Wilmington, Del., Wilmington Motor Trade Association. Date not determined.

Little Rock, Ark.; Little Rock Automobile Dealers' Association, Liberty Hall. April, date not determined.

Indianapolis, Ind., Automobile Trade Association, J. B. Orman, manager. Date not determined.

Montreal, Canada, Automobile and Used Car Exposition, T. C. Kirby, manager. April 5-12.

Scranton, Pa., 13th Regiment Armory. Date not determined.

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MIDLAND MODEL M-S AND M-T TRUCKS

CONCENTRATION on what is practically a single design of power truck is the policy of the Midland Motor Car and Truck Co., Oklahoma City, Okla., a concern that has developed its truck division and is now prepared to produce these machines in considerable numbers. Oklahoma City is well into the southwest and seemingly remote from the cities where the automotive industry has been principally established. The claim is made by the Midland company that the location is extremely favorable from a business viewpoint from the fact that the materials can be transported to its plant at lower rates than completed trucks can be shipped from distant places by other manufacturers, and there is a considerable economy obtained that can be necessarily reflected in the market values of the machines.

Statement is made by the company that precisely the same construction units and parts can be obtained by it as are obtained by other concerns, it has equally good facilities for production, and the engineering standards are the same; that this being so the quality of the machines produced depends entirely upon the design, the factory facilities and the character of workmanship and supervision.

In organizing the truck department President and General Manager J. M. Aydelotte engaged Bert B. Fornaciari, formerly of the Harvey Motor Truck Co., Chicago, as production manager and chief engineer; W. B. Burgess as factory superintendent, William Ensign as superintendent of production, O. H. Brauer as engineer and F. J. O'Donnell as purchasing agent. The department was thoroughly equipped and every facility obtained that would insure manufacturing efficiency and economy.

Build Two Chassis to One Design.

The policy of the company with reference to manufacturing was determined, this requiring such essentials as were believed necessary for success. The purpose was to have practically one design and to build to this two chassis that would have 4000 and 5000 pounds load ratings, the main difference between these being in the type of rear axle. Decision was reached to use a worm and worm wheel drive for both, but a Timken full-floating rear axle for the lighter machine and a Sheldon semi-floating rear axle for the heavier.

Chief Engineer Fornaciari was for several years chief engineer for the Harvey Motor Truck Co., and he developed a design which is claimed to have exceptional qualities. After a considerable period of experimentation and tests of constructions the design was approved and plans for production made and a sales organization developed. The expectation of the company is to operate in that section of the country in which it is established—the Middle West, Northwest and Southwest, increasing its activities and its market as conditions justify. There is reason to believe that power trucks will be used in constantly increasing numbers in the agricultural sections of the country, especially where the distances to shipping points are considerable and transportation generally is costly. This being so, there is ample reason to believe that a concern located where it can afford a character of factory service such as is desired by owners will be successful in competition with other concerns operating at much greater distances.

Constructed from Standard Parts.

The design of Midland trucks is in every way conventional. The machines are constructed from units and parts that are produced by specialists. Without exception these are developments of years of manufacturing and service experience, based on thoroughly proven engineering and with the use of materials that have been in many cases approved by the best authorities of the industry. The company does not purpose to exploit exclusiveness of design or construction, but maintains that it has combined these units to obtain what will have exceptional quality. This has been done by careful study of and attention to assembly detail, the object being to have the design in every way measure up to the standard.

The chassis has been simplified to an unusual degree, all factors of safety are exceptionally large, and much care has been taken to have all moving contacting parts of such area that wear will be very slow. The simplification makes for economy of labor in maintenance and adjustment and restoration, and repair may be made with minimum labor. The provision made for lubrication is very well thought out, the object being to enclose all wearing parts wherever possible and to have protection against abrasive action that could be expected with any accumulation of free lubricant.

Units Are Carefully Chosen.

In the choice of the construction units only those that are known as specialized types were selected. These include Buda engines, Eisemann magnetos, Stromberg carburetors, Duplex governors, Borg & Beck clutches, Brown-Lipe transmission gearsets, Brown-Lipe controls, Sheldon rear axles, Timken rear axles, Sheldon front axles, Timken front axles, Sheldon springs and Ross steering gears. While the chassis are the same in design the two-ton unit is known as model M-T, this having Timken front and rear axles, and the 2½-ton unit is known as model M-S, this having Sheldon front and rear axles.

The chassis both have wheelbase of 150 inches, with 58-inch tread, overall lengths of 226 inches and widths 72 inches. The loading space back of the driver's seat is 132 inches. The chassis have road clearance of 11 inches. The frames are 31 inches above the ground when loaded and the floors of the bodies are 41 inches above the ground when fully freighted. The maximum speed recommended is 16 miles an hour.



Midland Model M-S Truck, with Platform Body and Removable Sides and Top Used for Long Distance Haulage of Oil Field Supplies from Oklahoma City, Okla., to Wellington, Tex., a Distance of 196 Miles, a Two-Day Trip.

Engine a Model HU Buda.

The Buda engines are a four-cylinder, four-cycle, water cooled, vertical, L head type, having cylinder bore of 4¼ inches and stroke of 5½ inches, these having rating by the S. A. E. formula of 29.10 horsepower. This is the model "HU," which was specified by the United States government in model A army trucks. The maker claims that this engine will develop 42.50 horsepower at 1850 revolutions. As this is largely in excess of what would ever be required with trucks of this capacity, the engine is governed so that this power output will not be reached.

The Buda "HU" cylinders are cast en bloc from a fine quality of gray iron with the water jacket integral, the top of the jacket being open. The intake passage from the left to the right side of the block and to the valve pockets is cored into the block, this insuring gassification

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of the fuel drawn from the carburetor before it reaches the cylinders. The head of the water jacket is a large plate with a deep, longitudinal channel in the center that increases in depth from rear to front, so that the water flows from the rear over the combustion chambers of the cylinders, effectively cooling them. The pistons are cast from the same quality metal, are fitted with three rings each and are grooved to insure equality of oil distribution on the cylinder walls.

General Details of Engine Construction.

The crank case is cast from gray iron in two sections. The upper section has a vertical transverse web that carries the center main bearing, and the rear support arms are cast integral. The lower section is the crank chamber and the oil reservoir. Forward extensions of the sections form the housing for the timing gearset. There is a series of longitudinal fins on the outside bottom of the lower section that serve to increase the rigidity of the casting and to radiate the heat from the oil.

The crankshaft is a special steel drop forging, heat treated and ground to dimensions, having three journals, these being 2⅛, 2¼ and 2⅜ inches diameter from front to rear, and lengths of 3⅛, 2¾ and four inches in the same order. The total bearing length is 9⅞ inches. The crank pins are 2⅛ inches diameter and 2½ inches length. The flywheel flange is forged integral with the shaft. The camshaft is a special steel drop forging with the cams and the flange for the timing gear integral. This is a three-journal type. The shaft is case hardened and it is ground to dimensions. The wristpins are steel tube, case hardened and ground, that are seated in the piston bosses, and on these the phosphor bronze bushed connecting rods oscillate. The main bearings and connecting rod are babbitt in bronze cages; the camshaft bearings are phosphor bronze.

The connecting rods are steel drop forgings that are heat treated. The timing gearset gears are large diameter and wide faced, and are cut helical. Much care is taken to have accurate gear centers. The relations of the gears are maintained by thrust screws, which prevent end play. By removing the cover of the bushing the gears are accessible. The valves are tungsten steel and operate in long guides. The valve tappets are a mushroom type that are fitted with adjusting screws and nuts and operate in large guides. The valve mechanism is enclosed by a cover plate retained by easily removable cap screws.

Cooling and Lubricating Systems.

The engine is cooled by a circulation of water through the cylinder jackets and a vertical finned tube radiator with cast top and bottom tanks, the top tank being finned. The radiator is cushioned on fabric pads and coil springs to protect it from shocks and chassis distortion. The water is circulated by a centrifugal pump driven by an outside shaft from the timing gear, the water entering the base of the cylinder jacket directly under the valves. Radiation is promoted by a large fan carried on ball bearings on an adjustable bracket on the forward end of the engine block, that is driven by a flat belt from a pulley on the forward extension of the water pump shaft.

The engine is lubricated by a geared pump driven from the camshaft that draws oil from the screened intake in the oil reservoir and forces it through a tube to the main bearings and the timing gearset. From the main bearings the oil is forced through channels drilled in the crankshaft to the crankpins and through tube to the wristpins. Oil forced through ducts cast in the crank case lubricates the camshaft bearings. The oil distributed by the centrifugal movement of the shaft lubricates the cylinders and pistons, cams and valve tappets. The oil drains to the base of the crank chamber and thence to the reservoir. The oiling system has 2¼ gallons capacity and the pressure is 40 pounds to the square inch at 1000 revolutions, when 1¼ gallons a minute is circulated. The pressure at 500 revolutions is from 25 to 30 pounds.

The source of the ignition current is an Eisemann high-tension magneto and the fuel is supplied through a Stromberg carburetor from a 25-gallon tank carried under the driver's seat. The governor is a Duplex.

The Power Transmission System.

The power transmission system includes a Borg & Beck single plate dry disc and a main shaft in two sections extending to the rear axle with a gearset mounted amidships. The clutch is completely housed and while it is instantly adjustable it requires no lubrication and comparatively little attention. The clutch is positive in action and very easy engaging. The forward section of the driving shaft has a universal joint at either end. The transmission gearset is a sliding gear selective type, having four forward speed ratios and reverse, the fourth speed direct drive and it is suspended at three points from two frame cross members. The gearset is heavily constructed and the gear faces are one inch width. The rear section of the shaft is equipped with two universal joints.

The Timken worm and worm wheel rear axle is a full-floating type and is fitted throughout with Timken roller bearings. The Sheldon semi-floating worm and worm wheel rear axle is fitted with annular radial and thrust bearings. The full-floating type has the wheels each mounted on two bearings on the outside of the axle housing, the wheels being driven by clutch plates on the shafts that engage with the wheel hubs. The semi-floating type has the wheels keyed to the outer ends of the driving shafts, which are carried on bearings mounted within the outer ends of the axle housing. In the former the axle housing carries the load and in the latter the axle shaft carries the load. In both types the worm shaft and the worm wheel and differential gearset and the bearings are mounted on the cover of the central section of the axle and run in oil baths. The driving and braking stresses and torque are taken by the springs, there being no radius rods.

The Other Chassis Elements.

The frame is pressed steel channel section six inches wide with 2¼ inch webs of ¼-inch metal, with the cross members strongly gusseted and reinforced, and the forward end is extended beyond the radiator, the front cross member serving as a bumper. The frame is suspended on semi-elliptic springs, the front set being 43 inches long and 2½ inches wide, and the rear set 56 inches long and three inches wide. The wheels are wood, artillery type, with 14 two-inch spokes forward and 14 2½-inch spokes rear. The wheels are shod with solid band tires, 36 by four inches forward and 36 by seven inches rear. The steering gear is a irreversible type, with heavy linkage, the steering column, with an 18-inch hand wheel, being located at the left side.

The control is by the usual foot pedals for the clutch and service brake, hand levers for the ignition system and fuel supply on the wheels of the steering column, with the gear shifting and the emergency brake levers in the center of the foot board. The brake shoes are an internal expanding type, operating within 18-inch drums on the rear wheels, these having unusual efficiency.

The chassis are equipped with driver's cabs with windshields and winter fittings, dashes, footboards, front mud guards, oil dash and tail lamps, mechanical horns, jacks, odometers and full sets of tools. The prices are $3000 for the two-ton chassis and $3150 for the 2½-ton chassis at the factory.

The accompany illustration is one of a number of trucks used for freight haulage over the Ozark trail between Oklahoma City and Wellington, Tex., a distance of 196 miles, the round trip requiring four days. The body is a platform type with solid removable sides and top. The freights are usually bulky material used in the oil fields of southwestern Oklahoma and northern Texas, or supplies for operators of oil wells and prospectors.

ASK CONGRESS TO SEND AUTO EXPERTS ABROAD.

A delegation from the National Automobile Chamber of Commerce will ask Congress to appropriate money to pay expenses of experts to go abroad and gather information which will aid in increasing the automobile export business.

In 1915 the exports of automobiles from the United States had a value of $111,554,000. This grew to $120,600,000 the following year. However, in 1917 the effects of the war were felt greatly and exports had a value of only $119,800,000, these products going to 82 different countries. With the war still on, the first seven months of the present year found a total automobile exportation of $56,943,000.

Great opportunities for the American motor car in Europe, the Orient, South America, South Africa and Australia, are seen by the automobile industries affiliated with the National Automobile Chamber of Commerce. The Bureau of Foreign and Domestic Commerce with the aid of the consular service is now the agency of this country for stimulating foreign trade.

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Must Utilize Trucks To Supplement Railroads

The improvement and construction work that will reach mammoth proportions next spring and summer will require motor trucks by the thousands, predicts G. A. Kissel, president of the Kissel Motor Car Co., Hartford, Wis. He believes that motor trucks will continue to help relieve the railroads transporting goods, merchandise and freight for some time to come. This, he says, is indicated by the big corporations manufacturing railroad freight cars accepting orders from different countries abroad. Mr. Kissel made the following statement:

"Without a doubt the American railroads could easily use the total output of American freight car manufacturers to replenish their freight carrying equipment. Since we entered the war our freight rolling stock has seen strenuous use. Through the scarcity of labor they have undoubtedly not had the customary inspection and repair attention as in normal times.

"The rolling stock of such countries as England, France, Italy and other countries has been practically annihilated through constant usage. It is of the utmost importance to facilitate the reconstruction work 'over there,' which means an unlimited supply of freight cars. These countries will no doubt be supplied with rolling stock as soon as possible. In fact, I understand that recently one of the big freight car manufacturers has accepted over $30,000,000 of export orders, calling for thousands of freight cars for Italy and other countries. This will undoubtedly make it necessary for the American railroads to continue the use of old stock as long as possible, which, as experience has proven, is not equal to the transportation requirements of the country. Hence the motor truck will be called upon to make up the difference.

"While the motor truck has thus proven a Godsend to the railroads, it must be remembered that the business and industrial world can use every truck that is available and more. There is a shortage right now in all lines of manufacturing, not mentioning the thousands of tons of agricultural produce that depends on the motor truck for transportation to market."

DORT EMPLOYEES SHARE FUND OF $40,000.

At a Christmas dinner of employees of the Durant-Dort Carriage Co. in Flint, Mich., 111 employees who had worked continuously in the company's service for six years or more shared in a bonus of $40,000, the checks passed out ranging from $50 up to more than $2500. Distribution was made under what is known as the "Loyalty and Merit" plan, which was originated by J. D. Dort, president of the company. Three hundred employees attended the dinner.

VALUE OF TRUCKS FOR LIVE STOCK TRANSPORTATION.

Adaptation of pneumatic tires to the motor truck is claimed to so greatly increase its utility that there are almost unlimited possibilities for their use on farms and for general transportation. The degree of practicability of a motor truck, used for general farm transport, is strikingly emphasized in the experience of Edward Schipporiet, owner of a 2800-acre ranch near Scheding, Neb., in the sand hill country. On this ranch a one-ton Goodyear pneumatic equipped truck is used in hauling live stock, feed and supplies.

There are no roads worth mentioning around the ranch itself or between the ranch and the nearest shipping point, 27 miles distant. Yet, during winter and summer, this truck has saved a great amount of hauling time and labor.

When hurrying stock to the railroad it makes two round trips, or 108 miles, over cattle tramped sand hills in a single day, replacing two teams which required two days of hard pulling to make one round trip. And the owner states that due to the cushioning of the pneumatic tires and the greatly reduced time consumed in hauling the stock to the station, there is now less weight shrinkage in animals sent to stock yards, all of which represents a definite money saving.

ITALIAN AUTOMOTIVE INDUSTRY GREATLY DEVELOPED.

The Italian automobile industry during the war has given proof of extraordinary development and is now of great importance. The number of limited liability companies engaged in this industry has increased from 32 on Dec. 31, 1913, to 55 at the end of 1917, while the capital employed has risen from 49,167,000 lire to 195,076,000 lire. The average dividend has increased from 3½ per cent. in 1913 to eight per cent. in 1917.

As regards foreign trade the import of automobiles has declined from a value of 13,531,372 lire in 1913, to 7,729,900 lire in 1917, a falling off of 5,801,472 lire. Exports, however, have increased from 34,180,937 to 115,693,805 lire.

STANDARD PARTS INCREASING WORKMEN.

More men are being put to work at the plant formerly operated by the Hess-Pontiac Spring and Axle Co., Pontiac, Mich., which is now one of the subsidiaries of the Standard Parts Co. As rapidly as supplies arrive the force will be increased until 500 men are employed, which was the normal pre-war force.

DROPS PLAN TO MAKE FORD PLANTS HOSPITALS.

The War Department has abandoned the plan to alter the assembling plants of the Ford Motor Co. in Milwaukee, Wis., and in Des Moines, Ia., into army hospitals.

National Highways Building Must Be Rushed

Secretary of Agriculture D. F. Houston recently told editors of agricultural journals, at a conference held in Washington, that a cooperative highway construction under the Federal aid road act must be resumed as quickly as possible in full measure.

He said that there would be this year about $20,000,000 from Federal appropriations and probably more than this amount from state sources. The states, in addition, will expend sums in excess of what they have assigned, or will assign, for Federal aid road projects.

"It seems to me," said the secretary, "that we should take a further step—take this step not only because of the importance of good roads, but also because of the desirability of furnishing worthy projects on which unemployed labor during the period of readjustment may be engaged. There will be many things suggested for which Federal and state funds will be sought. Some of these will be unworthy. Clearly such public works as roads are worthy, and it would be in the public interest to make available larger appropriations from the Federal treasury to be used separately or in conjunction with state and local support.

"There need be no delay in the execution of such a program. The nation has already provided the machinery in the Department of Agriculture and in the state highway commissions. The Federal aid road act was fruitful of good legislation, and each state in the Union now has a central highway authority with power and funds to meet the terms of the Federal act. The two agencies in conjunction have been engaged in devising well considered road systems and in making surveys, plans and specifications. The task will be one of selection and those roads should be designated for improvement which are of the greatest economic importance, with due regard to such military and other needs as are proper for consideration. There is no necessity for any departure from this scheme. The suggestions made have been canvassed with the President, the secretary of war and the postmaster general, and they are in accord with the view that additional funds should be made available to this department and that they should be expended through existing machinery."

TEXAS HIGHWAY AUTHORIZED.

Plans for making permanent the portion of the Henry Axall highway that passes through Navarro county, Texas, have been completed. A committee of Corsicana, the county seat, has returned from Austin, where it was awarded by the Texas State Highway Commission $155,000 for the construction of a concrete highway through the county. Road funds of the county will add $130,000 to this amount.

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UNITED STATES MUST WATCH NEW ZEALAND MARKET.

Alfred A. Winslow, American consul general in Aukland, reports that the motor car, motor bicycle and tricycle trade in New Zealand has fallen off materially during the last two years, and will doubtless continue at a lower rate as long as the exceptionally high prices of benzine, gasoline, etc., continues.

However, motor cars are being put to more practical use in the country than ever before, since farmers are using them extensively for different kinds of work about the farm and in transport wherever it is possible, using such attachments and improvements as are now on the market to adapt them to different kinds of work.

The high water mark was reached in 1916, when the number of cycles imported was 2287 and the number of motor cars 6174. In 1914 motor bicycles and tricycles were nearly all imported from the United Kingdom, while in 1917 a large majority of them came from the United States. This is largely true in regard to motor cars, but not to the same extent, for in 1914 there were 1093 motor cars imported from United Kingdom, as compared with 72 motor cars in 1917, while from the United States there were 1308 imported in 1914, as compared with 3596 in 1917.

These favorable conditions enjoyed by American cars and motorcycles cannot be expected to continue after the closing of the war, and American manufacturers and exporters will need to look carefully after the trade in this part of the world.

SAMPLES OF CRUDE PLANTATION RUBBER FOR INSPECTION.

Consul G. L. Logan, Penang, Straits Settlements, has forwarded to the Bureau of Foreign and Domestic Commerce samples of crude plantation rubber, graded in accordance with the classifications in use there, as follows:

Unsmoked diamond sheet, smoked diamond sheet (light), smoked diamond sheet (dark), unsmoked plain sheet, smoked plain sheet, pale crepe (variable), brown crepe (variable), blanket crepe (variable).

These samples may be examined at the Bureau of Foreign and Domestic Commerce or its district offices by referring to file No. 108,614.

OVERLAND BUILT 100,000 CARS DURING WAR.

Willys-Overland, Inc., Toledo, built 100,000 Overland cars during the war period. The "war contracts" totaled $80,000,000, and in order to take care of these $12,000,000 was spent for new buildings and equipment.

REO FIGHTERS GET OLD JOBS.

The Reo Motor Car Co., Lansing, Mich., announces that all of the 812 men who left its employment to enter the army or navy will get their old jobs back.

Canada Plans Many Extensions of Highways

In all the principal agricultural sections of Canada farmers own automobiles invariably, according to Ernest Godfrey, editor of the Dominion Bureau of Statistics. He predicts that there will be a further continuous increase in the number of these vehicles, as the movement for better roads is being actively prosecuted. He points out that during the last parliamentary session legislation to facilitate the provision of better roads was placed on many of the provincial statute books.

Mr. Godfrey states that during the last few years there has been a big increase in the registration of automobiles in Canada. Four years ago, during the first year of the war, he states, the number registered throughout Canada was 69,598, whereas in 1917 the number was 197,799. The number is largest in Ontario, where in 1917 there were 83,308 motor vehicles registered as compared with 31,724 in 1914. Saskatchewan, the next largest agricultural province, has 32,505, as compared with 8020 in 1914.

The number of establishments classed as manufacturing automobiles in Canada during 1917 was 11, besides there were 24 establishments manufacturing automobile accessories and 497 engaged in repair work, according to a report issued by the Dominion government.

The total capital invested in these industries in 1917 was $35,780,677, comprising $28,192,858 in automobiles, $3,155,893 in accessories and $4,431,926 in repair shops. The number of persons employed was 9418, of whom 563 were females. The total amount paid to them in wages was $9,239,952.

The total number of cars recorded in the census returns was 89,676, of which 80,544 were touring cars, 5502 runabouts, 1165 closed cars, 1231 delivery wagons, 561 roadsters, 117 trucks and 556 not classified.

The road building program for Canada has been placed in the front rank of the public construction work approved by Hon. F. S. Carvell, minister of public works, and Hon. J. A. Calder, minister of immigration. Completion of the transcontinental highway, extending from Moncton on the Atlantic to Vancouver on the Pacific, most of which has already been built, but needs to be linked together by stretches across the Rockies and in parts of the high lands of Ontario is promised.

A new tourist highway from Edmonton westward into the Rockies to Jasper Park, and eventually clear through the Prince Rupert, is announced from Edmonton, while roads into the north country of the three provinces, Manitoba, Saskatchewan and Alberta, is provided for in new legislation before the provincial parliaments.

The Reo Motor Car Co. has voted a 2½ per cent. quarterly dividend for stockholders of record Dec. 14.

ROAD BUILDING TO COST IOWA $50,000,000?

A determined fight for good roads in Iowa was expected with the opening of the session of the Iowa Legislature in January. Representative Nebiker of Burlington has completed the draft of a bill which he will introduce. The bill would do away with the present state highway commission and create a state highway department with headquarters in Des Moines. The department would be headed by a commission of three men appointed by the governor and with powers far outreaching those of the present commission.

There would also be a highway engineer and an assistant highway engineer with salaries of $4000 to $2500 a year respectively. Salaries of the commissioners are set at $3500 a year.

The bill proposes to create a state wide system of 17 roads, to be constructed of "durable, hard surfaced materials." To finance this Mr. Nebiker would issue state bonds to the amount of $50,000,000 to draw from 3.5 to 4.4 per cent. interest and to be issued for 20 years. Direct taxation and use of the motor vehicle license fees would take care of the interest and principal at maturity.

GENERAL TIRE CAPITAL INCREASE APPROVED.

At a recent meeting of the stockholders of the General Tire and Rubber Co. action of the board of directors to increase the capital stock from $1,000,000 to $2,500,000 was approved by the stockholders.

W. O'Neil, vice president and general manager, stated: "Sales for 1918 are $3,000,000, an increase of 125 per cent. over the previous year. We anticipate doubling this volume in 1919, and reaching $6,000,000 net sales."

A special stockholders' meeting was held Jan. 30 and voted to increase the capitalization. The additional capital will be used for new buildings and machinery to greatly increase production.

The stockholders elected the following directors: M. O'Neil, W. O'Neil, T. F. O'Neil, W. E. Fouse, G. F. Burkhardt, W. L. Beckley and J. A. Diebolt.

The following officers were re-elected: president, M. O'Neil; vice president, W. O'Neil; secretary, W. E. Fouse; treasurer, Charles Herberich.

STUDEBAKER WILL MAKE DELIVERIES MARCH 1.

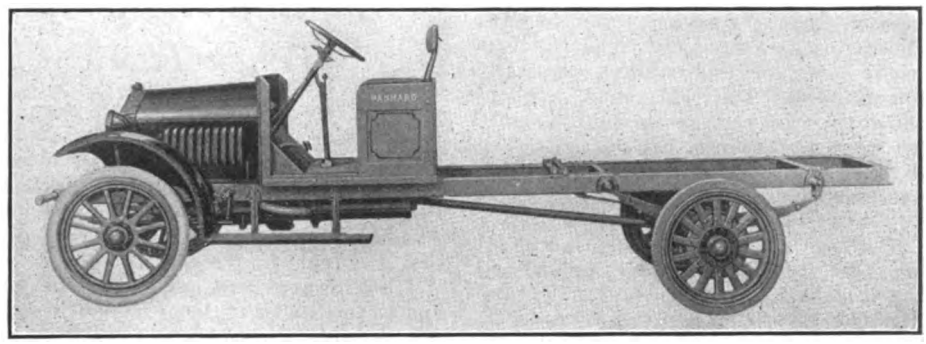
The Studebaker Corporation will be able to make regular deliveries on its line March 1. The plant at South Bend, Ind., is gradually being converted back to a peace time basis. The line embraces the light four at $1125; light six, $1585; big six, $1985; light four sedan, $1685, and light six sedan, $2185.

The New-Way Motor Co., Lansing, Mich., has been granted permission to increase its capital stock from $500,000 to $750,000.

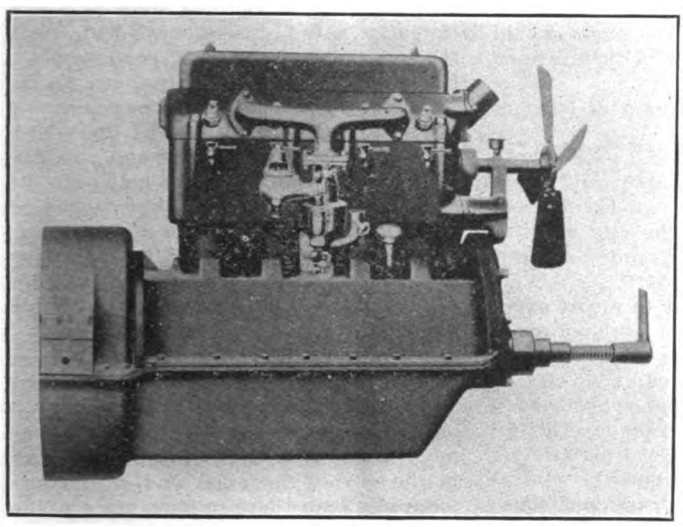
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PANHARD 1½-TON "TWIN-FRAME" TRUCK

THE twin frame, so-called, is the novel feature of Panhard trucks, built by the Panhard Motors Co., Grand Haven, Mich., which is claimed by the engineers of the company to afford strength where it is greatly needed—between the forward ends of the rear springs and the rear ends of the forward springs, where a large part of the weight is carried, and the frame subjected to all the stresses of unequal loading and road shock. The "twin frame" consists of two reinforcing members that extend from a cross member forward, where they are joined with the main frame side members. This construction is maintained to afford a degree of stability that cannot be otherwise obtained, and the design allows the use of somewhat lighter material for the frame members, so that there is but little additional weight. The strengthening of the frame is claimed to greatly protect the power plant and power transmission system against stresses and cramping, and to add greatly to the service life of the machines.



Side View of the Panhard 1½-Ton Truck, the "Twin-Frame" Extending from a Cross Member at the Forward Hangers of the Rear Springs to the Main Side Members at the Rear Hangers of the Forward Springs.



The Panhard Specially Designed Engine, with Cylinder Bore of 3½ Inches and Stroke of Five Inches, with Overhead Valves and Positive Pressure Oiling System.

Panhard trucks are not experimental so far as the design is concerned. This has been amply proven in all kinds of service for several years and the company claims that the "twin frame" has much to recommend it as compared with conventional frame construction.

The Panhard 3000-Pound Chassis.

The Panhard company produces two size chassis, of 2000 and 3000 pounds load capacities. The former sells for $1195 and the latter for $1395 f. o. b. at Grand Haven. The most recent production is the 3000 pound chassis, which is built to meet a rapidly increasing demand for a Panhard unit of this capacity. The chassis has a wheelbase of 130 inches and tread of 56 inches.

The chassis has a unit power plant that consists of a four-cylinder, water cooled, vertical, four-cycle, I head engine, having cylinder bore of 3½ inches and stroke of five inches. This is rated by the S. A. E. formula at 19.60 horsepower, but claim is made by the company that it will develop 35 horsepower, a power development that is much larger than is required in normal work for a machine of this size.

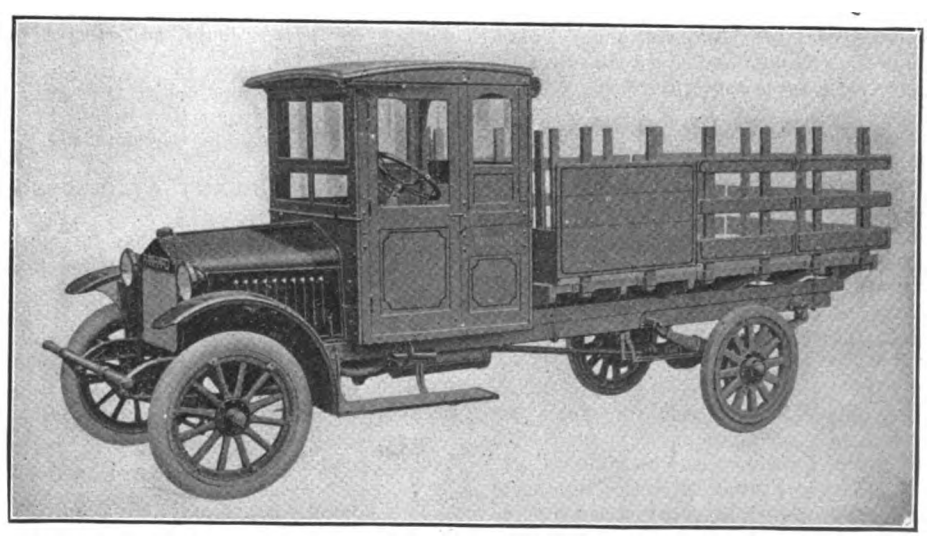
The engine is specially designed for truck duty and it has a three-bearing crankshaft that is two inches diameter, this being considerably larger than is used in engines of this rating. The engine is heavily proportioned throughout. The cylinders are cast en bloc, with a detachable head and with the water jacket integral. The water chambers are unusually large to insure efficient cooling, as the water is circulated by gravity.

The crank case is cast in two sections, the upper half carrying the main bearings and the lower section is the base for the crank chamber and the oil reservoir. Forward extensions of the crank case sections house the timing gearset and the bell housing for the flywheel is rear extensions of the sections.

Lubricating and Cooling Systems.

The engine is lubricated by a pressure system, the oil being taken from the reservoir and forced to the main bearings and the timing gearset, and the cylinders, pistons, wristpins, camshaft, cams and valve push rods are lubricated by distribution by the centrifugal motion of the crankshaft and the splash of the big ends of the connecting rods in oil troughs in the base of the crank chamber. The engine is cooled by a thermo-syphon circulation of water through the cylinder jackets and a Perfex radiator, with a removable core, with cast top and bottom tanks, the top tank being finned. The radiator is cooled by air drawn by a large fan mounted on the forward end of the engine block on a shaft carried on a ball bearing seated in an adjustable bracket. The fan is driven by a flat belt from a pulley on an outside shaft driven from the timing gearset.

The engine is equipped with an Auto-Lite generator and lighting system that is combined with a Connecticut distributor for ignition, the system having a Willard six-volt storage battery. The fuel is supplied by a Stewart vacuum feed system to a Stromberg model M-1 carburet-



Panhard 1½-Ton Chassis Equipped with a Fore-Door Fully Enclosed Driver's Cab and Platform Body with Rack Sides, a Type Intended for General Work.

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or. The drive from the engine is through a Fuller combined multiple dry disc clutch and a selective sliding gear transmission gearset having three forward speed ratios and reverse. The clutch is easily adjustable and requires practically no attention. The shafts and gears of the gearset are very heavy and the shafts are carried on annular ball bearings. The driving shaft is a tubular type, with a universal joint at either end.

Driven by Internal Gears.

The rear axle is a Torbensen internal gear, the dead axle carrying the load and the jackshaft driving the internal gears. The dead axle is an I section with an extended center, to which the jackshaft is bolted, and the ends of the jackshaft are carried by the brake flanges that enclose the internal gears and fit closely within the brake drums. The spindles of the dead axles are vanadium steel, and all of the gears of the axle are chrome nickel steel, heat treated. The axle is fitted with roller bearings throughout. The front axle is a heavy I section steel drop forging that is equipped with roller bearings. The frame is constructed of pressed steel channel section and it is suspended on semi-elliptic springs of unusual length. The axle wheels are wood, artillery type, shod with solid band tires, 32 by 3½ inches forward and 32 by 4 inches rear.

The control is by foot pedals for the clutch and service brake and the steering column is at the left side, on this being mounted the hand levers that control the ignition system and the fuel supply. The gear shifting and emergency brake levers are at the center of the footboard. The regular equipment includes driver's seat, running boards, fenders (rear fenders with express body), electric dash and tail lamps, electric horn, jack and tool kit. The chassis are finished in olive drab and black enameled hood and fenders.

HOLMES FOUNDRY CO. TAKES OVER ROMEO CO.

Following the reorganization of the Romeo Foundry Co., the Holmes Foundry Co., Port Huron, Mich., has been incorporated with capital stock of $1,250,000. The officers are: President, L. A. Holmes; vice president and general manager, L. G. Blunt; secretary-treasurer, C. C. Peck; general superintendent, William F. Hooper.

The reorganized company is closely associated with the Holmes Foundry Co., Ltd., Sarnia, Canada, of which Mr. Holmes is the head. The company will continue to supply castings and other foundry products required by the General Motors Co. and its subsidiaries.

RAYMOND DROWN KILLED BY TANK MINE.

Raymond Drown, son of John W. Drown, advertising manager of the Standard Roller Bearing Co., Philadelphia, Pa., was killed in France after the signing of the armistice, while engaged as a member of the Engineering Corps in removing mines laid by the German to trap tanks. He was a corporal.

Bay State Dealers to Fight a Higher Truck Tax

Motor truck owners and dealers in trucks and cars throughout Massachusetts have begun a fight against some of the provisions recommended to the Legislature by the joint committee appointed to investigate motor matters. Larger fees are urged by the committee.

Truck owners now pay $5 for one ton and $3 for each additional ton. The new fees provide:

1	ton	$15
1½	tons	30
2	tons	40
2½	tons	50
3	tons	75
4	tons	100
4½	tons	150
5	tons	200

For every additional ton there would be a fee of $200. Motor vehicle owners would have to pay the fees.

The committee proposes a division of motor dealers into three classes: Those who sell machines, new and used; those who deal in used cars solely, and those who buy cars for junk. All would have to take out licenses in the city or town where they do business, and a fee for this might be as high as $100.

The dealers would have to report every day to the Highway Commission every car or parts of machines taken in trade or bought. Those licensed under classes two and three would be compelled to hold their cars at least four days before reselling unless given special permission.

Dealers are now allowed several license plates for their cars and these are registered at a lower price than those in use all the time by owners. The report recommends that cars of dealers pay the same fees as that of the owners.

The weight of the load in tons is restricted to six tons and the length overall of trucks and trailers 26½ feet, height 11 feet and width 92 inches. Jitneys would be limited to their carrying capacity for seats, except that children under seven years could be carried in adults' laps.

An attempt was made last year to increase the fees so that they would be a flat $10 a ton, but this was defeated.

NEW BEARING PLANT AT OWOSSO.

Bronze babbitt-lined bearings for automobiles, auto trucks and electrical motors will be manufactured by the Owosso Bronze Bearings Co., Owosso, Mich., which has completed its organization. The company is incorporated at $25,000. The officers are: President, J. H. Robbins; vice president and general manager, James Van Pelt; secretary-treasurer, Albert L. Nichols.

The Advance Brass Manufacturing Co., Muskegon, Mich., has appointed Oscar P. Berg manager. He was for eight years register of deeds of Muskegon county.

AKERS PROPOSES STATE RURAL EXPRESS COMMISSIONS.

A study of the rural express lines problem has convinced F. H. Akers, sales manager of the Reo Motor Car Co., that a rural express commission operating under state laws may eventually have to be created in each state to control the situation. Tariffs, he says, will have to be established and there must be better protected roads.

Mr. Akers believes that it is the greatest system of transportation ever devised, and that, as such, it should be protected from its pit falls.

"It is like any other expedient designed to meet an emergency," says Mr. Akers, "there are, apparently, some wrinkles that must be ironed out before the system will operate entirely successfully.

"Not long ago one of our truck dealers in Washington saw a very feasible untraversed motor express route between a small town and a fairly good sized city. A young clerk in a clothing store had consistently saved his money—had been reading the government's propaganda—and saw in the rural express idea an opportunity of becoming his own boss—a proprietor of a rural express line—with every chance to expand. The young man enlisted the help of the truck dealer. Together they canvassed the merchants in the town and were assured of enough business to make the line pay, providing a reasonable amount of freight could be secured in the city to haul back.

"The young man purchased the truck and soon had a thriving little business. Then another truck dealer got busy and persuaded another man to enter the business. Competitor No. 1. A truck dealer in the city at the other end of the line induced a man there to inaugurate a line on the same route. Competitor No. 2. Shortly there were four competitors on the one line and when the business was split four ways there was not enough money left to pay gasoline bills.

"Had a properly constituted commission been established with the necessary authority to grant franchises and limited the route to two competitors the enterprise would have been a success. With the franchise there would naturally go some undertakings on the part of the truck owner. For example, he would have to give a bond to deliver on schedule the same as the parcel post contractor in any city, with a penalty attached for failure. Rates would be established by this commission. A truck owner should not be compelled to make rates so low that he can't give good service or yet, because of his franchise, be allowed to charge exorbitant rates.

"The return loads bureau, which is another factor in conducting the rural express system, is something else that will need careful attention. The evil of all loads being return loads, will be a menace to the rural express system unless carefully guarded against."

Harry W. Perry has taken charge of the Washington bureau of the National Automobile Chamber of Commerce.

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HIGHWAYS TRANSPORT ECONOMIES

THE Highways Transport Committee of the Council of National Defense has impressively demonstrated the need for highways spanning the country in all directions, and so constructed and handled as to meet the imperative needs of the post-war situation in the United States.

Development of the provinces of the Highways Transport Committee was to the end that the highways themselves might carry their share of the burden of war, and in the most efficient manner possible. This has resulted, however, in the energizing of the highways and in the encouragement of rural motor express development, which operates to bring the producer of foodstuffs and the consumer in such close touch as to revolutionize the transportation situation wherever these lines are in existence.

This committee has suggested and has aided in the establishment of Return Load Bureaus, with the result that conservation of man power, machinery and the highways has been effected to a marked degree. These bureaus, located in centers of traffic, have assisted the truck operator in obtaining loads both ways, and through them an immense amount of short haul traffic unprofitable to the railroad and needlessly congesting it has been diverted to the highways.

Cooperation with the inland waterways of the country has been brought about by supplying the link necessary to complete the chain of transportation between the wharf and the point of destination of the commodity through efficiently operated transport over the highways.

As a result of combination between operators of motor express routes and the electric railways, the two have been able to work to mutual advantage, since the development of new territory has added a very material tonnage to the haulage on the electric lines.

The State Highways Transport Committee, through organizations extending down through the state and the district to the county, have been enabled to spread the gospel of the best possible use of all forms of highways transport, which, to be practical, means in the final analysis properly constructed and intelligently regulated highways radiating throughout the country.

In a concrete way some of the results which have been accomplished by the Highways Transport Committee of the Council of National Defense in the few months of its existence are as follows:

It has aided the War Department materially in the removal of snow from highways over which convoys of motor trucks destined for overseas moved during the winter of 1917-18.

It has paved the way, through its organization extending into practically every state in the Union, for materially aiding the great readjustment program which the government is now entering, particularly by indicating the fields which are most capable of development through a more efficient scheme of transportation.

The various state committees have put themselves back of bond issues and other good roads campaigns in various states, and have furnished striking evidences of the material good to the community and country resulting from efficiently handled highways transport, while driving home the importance of intelligent direction of the highways of the future.

It has pointed the way, through utilization of the rural motor express, the return load bureaus, etc., for the conservation of a great part of the 50 per cent. of perishable foodstuffs which have gone to waste in the past because, upon the authority of Food Administrator Herbert Hoover, no adequate means of transportation has been available to get these foodstuffs from the producer to the consumer while in desirable form for use.

It has been the medium of stimulating fast express freight service through working arrangements between motor trucks and electric lines which operated to relieve the steam roads of the undesirable short haul.

It is driving home to the people the impressive testimony developed four years ago by a congressional investigation to the effect that the nation was suffering a loss of more than $500,000,000 yearly because of bad roads.

Its organized campaigns in the states and even in local communities are visualizing to the farmer the waste of bad roads and the economic value of good roads.

It has carried to remote sections of every state of the Union the message of Chairman Edward N. Hurley of the United States Shipping Board, in which he asked for the assistance of the committee in moving over the highways to seaboard shipping points the food supplies destined for the relief of the stricken peoples of Europe.

It has harkened to the earnest plea of Food Administrator Hoover for support for rural express lines as one of the most potent agencies in solving the food problems of this country and those of the Allies.

It has successfully sought to enable the farmer to make the most efficient use of his acres and of his time by availing himself of modern highways transportation, which means for him a full day on the farm while the rural express operator markets his products and carries home his merchandise.

MOTOR EXPRESS WILL CREATE DEMAND FOR GOOD ROADS.

The motor express will put the city family in direct touch with the farm, cut out a good deal of the middleman's profit, and bring down the cost of living, says A. C. Burch, vice president and sales manager of the Clyde Cars Co., manufacturer of the Clydesdale motor trucks. Mr. Burch believes that the present development of a network of rural motor express lines throughout the country will be of immense help towards the establishment of good roads.

"Heretofore," says Mr. Burch, "the chief obstacle in the way of building roads has been the fact that only a small percentage of the population has been vitally interested in it. The city dweller hasn't been a real enthusiast because good roads haven't seemed to directly affect his everyday life or his pocket book. About the only time he has had cause to complain over the roads is on an occasional motor car trip during the summer.

"The residents of the small towns and villages have been more interested. But many of them have not been able to see how the benefits they would derive would be worth the increased taxes. The farmers have, of course, been enthusiastic good road boosters, but even here the sentiment has been divided. The unprogressive farmers who have only had short hauls to make to market have been more afraid of the increased taxes than they have of the poor roads.

"I believe, however, that the rural motor express line will do more towards bringing all of these classes to a realization of the necessity of good roads than any other influence. The motor express will bring the towns and villages into closer contact with the big cities—reducing shipping costs and delays. And best of all, it will give every farmer a direct outlet for his products and enable him to sell where he can get the highest market price. Good roads are just as vital to the rural motor express lines as rails, ties and the road bed is to the railroads. By concentrating the influence of every class in cities, towns and farms toward the good roads movement through this interest in the motor express lines, I believe we will soon be able to throw a net work of good roads throughout every section of the country."

BRUSKE RETURNS TO AGENCY WORK.

Paul Hale Bruske, who for two years has been advertising director for the Harroun Motor Corporation, Wayne, Mich., has returned to the Power, Alexander & Jenkins Co., advertising agents. Mr. Bruske will continue to supervise the Harroun advertising and will also direct advertising campaigns for a number of Detroit manufacturers.

MAY "SCRAP" 500,000 SHELLS AT OVERLAND PLANT.

At the Willys Overland, Inc., plant in Toledo there are 500,000 unfinished eight-inch shells. These were sent to the Overland plant to be machined. It is probable that they will be scrapped. Each weighs 160 pounds, so that it may mean putting 80,000,000 pounds of shells in the junk pile.

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COOKE IS NEW DENBY ADVERTISING MANAGER.

Frank S. Cooke, the new advertising manager of the Denby Motor Truck Co., Detroit, was for years automotive editor of the Detroit Free Press. His career as a newspaper man in Detroit covers the



Frank S. Cooke, New Advertising Manager of Denby Motor Truck Co.

full period of the development of motor vehicles in that city, during which he has been intimate with every step.

Meanwhile he has written intelligently about harness horses, gaining fame in this specialty and being known wherever trotting is a favorite sport. Few men have been able to make a team out of a motor vehicle and a horse, but Cooke has driven them a winning race without punctures or spavins.

From the start of the specialized manufacture of motor trucks Mr. Cooke has been a student of the problems of transportation.

WANT THEFT A FELONY IN ARKANSAS.

The legislative committee of the Automobile Dealers' Association of Little Rock, Ark., has framed a law that would make it a felony to borrow, move or use for any purpose whatever a car or truck without the owner's consent. The bill will be presented to the Arkansas Legislature at the present session. A penalty of from one to five years' imprisonment is proposed for violation. Provisions are also made for the punishment of persons attempting to cover up the theft of accessories.

"KISSELGRAPH" IS NEW KISSEL HOUSE ORGAN.

"The Kisselgraph" is the name of the new house organ of the Kissel Motor Car Co., Hartford, Wis. The company had issued a weekly paper for its employees in the military and naval service, and this is now converted into a house organ for the dealer organization.

AMERICAN EXHIBITS AT FIRST POST-WAR FAIR IN FRANCE.

The Goodrich and Overland companies are among the American firms that will have exhibits at the first post-war automobile show in Europe. The show will be a portion of the Lyons Sample Fair, Lyons, France, and will be opened in the Silk City, March 1. A special building has been erected on the fair grounds to take care of the automobile manufacturers.

The French manufacturers' associations are encouraging participation of automobile manufacturers. In 1918 there were 3182 exhibitors at the Lyons Fair, and the amount of business transacted was $15,000,000. The fair this year will be the biggest ever, it is expected.

European automobile manufacturers who will have cars on exhibit comprise the following: Berliet, Blum, La Buire, Chiribibi, Cottin & Desgouttes, Delage, Delahaye, D. F. P., F. I. A. T., Hotchkiss, Panhard-Levassor, Rochet-Schneider, Th. Schneider, Turcat-Mery, Unic, Lorraine-Dietrich, De Dion Bouton, Peugeot, Roland-Pilain, Vinot & Deguingand. In addition a large number of tire and accessory firms have booked space, among them being Bergougnan, Nilmelior Magneto Co., S. E. V. Magneto Co., Zenith Carburetor Co., Dunlop Tire Co., Lavalette Magneto Co. and Oleo Spark Plug Co.

HIGHWAYS TRANSPORT NEED IS GOOD ROADS.

The motor truck is responsible for the present agitation in favor of good roads, says Clifford A. Williams, director of sales of the Kissel Motor Car Co. "We had it proven to us," says Mr. Williams, "that if the United States had been as well supplied with improved highways as France we could have transported twice the amount of goods and supplies at a much lower cost.

"With resolutions now before the Good Roads Association, highways state commissions, and eventually before the United States Congress at its next session, calling for hundreds of millions of dollars to be expended in road building and highway improvements, the year 1919 will undoubtedly see the greatest amount of work of this kind in the history of the country.

"The people of the United States have had it brought forcibly to them, first—the chaotic condition of the nation's transportation facilities, and, second—what a necessary utility the motor truck has become."

FINKENSTADT RETURNS TO STANDARD PARTS CO.

Capt. E. R. Finkenstadt has returned to the Standard Parts Co., Cleveland, O., after completing his duties as assistant chief of the truck section of the Motor Vehicle Division, Quartermaster Department, at Washington. He was for many months chief of the production of the class B truck, officially known as the Liberty truck.

PACKARD COMPANY PLANS FOR NATIONAL BUSINESS.

The Packard Motor Car Co. has founded an organization to serve particularly the transportation requirements of what is generally known as national business. The men selected to shape this service to truck users of national character are Packard men of wide experience in the field of motor transportation. They are A. C. Harrington, who for the last year has been vice president of the distribution for the Packard Motor Car Co. of New York, and F. H. Pietsch, manager of the truck distribution for the Packard Motor Car Co. of Chicago.

Mr. Harrington, with headquarters in New York, will have as his territory the eastern section of the United States. He has already associated with him in his organization James T. Adams, until recently manager of the Washington office, through which the Packard company served the motor transport need of the government during the war.

Mr. Pietsch, with headquarters in Chicago, will have as his territory the western section of the country east of the Rocky mountains. The home offices of the majority of companies doing a national business are in New York and Chicago.

JACKSON GOES TO AUTO BODY CO. AS GENERAL MANAGER.

W. V. C. Jackson, who for the last two years has been vice president of the Briscoe Motor Corporation, Jackson, Mich., has become vice president and general manager of the Auto Body Co., Lansing, Mich.

Mr. Jackson has been connected with the automobile industry since 1910. He



W. V. C. Jackson, Vice President and General Manager Auto Body Co.

was first associated with the Metal Products Co. of Detroit and then went with the A. O. Smith Co. of Milwaukee for five years prior to coming to the Briscoe company. He brings a well rounded and thorough manufacturing experience to the Auto Body Co.

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NEW TITAN 3½-TON HEAVY DUTY TRUCK

WHAT is practically a standard Titan chassis, rated at 5-6 tons load capacity, is now produced by the Titan Truck Co., Milwaukee, Wis., but equipped with lighter springs and wheels, and is marketed under the trade name of the "Titan Hi-Way Transport." The first truck built by this company was the 5-6 ton unit, which was carefully designed and developed, and was claimed to be the largest machine produced driven by internal gears. The policy of the company was to concentrate on this single chassis, but the demand for a lighter truck, that will have all the characteristics and qualities of the original unit, impelled the production of the newest chassis, which has a load rating of 3½ tons.

The Titan company devoted much time to consideration of design and determined to assemble a number of units and parts that are produced by specialists well known in the industry and are recognized by power truck owners as having what may be regarded as standard qualities. One object was to have a truck that could be guaranteed for heavy duty, would have more than the usual factors of safety and would have exceptional endurance. The trade name selected for the machine and for the company was with a view of emphasizing the type and construction of the truck and creating the impression that the machine was more than what was implied by the rating alone.

The company has met with a very satisfactory degree of success, the machines proving low of operating cost and being especially efficient where the working conditions required power and movement was slow because of heavy grades or limited space.

The new chassis is stated to be designed for inter-city haulage and speed is a quality to which special attention has been given. The gear reduction is such that a road speed of 16 miles an hour is obtained without excessive consumption of fuel.

Construction Units Are High Grade.

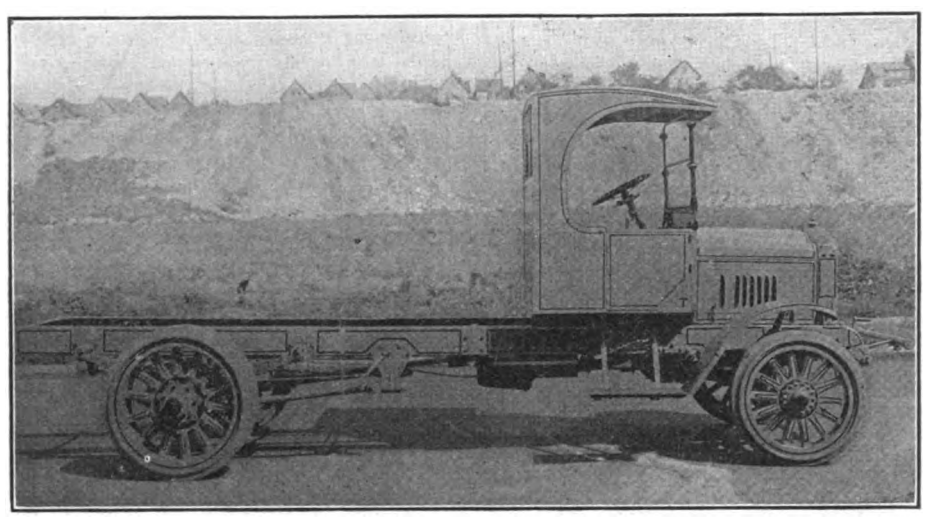
In the selection of construction units, the satisfaction obtained with the 5-6 ton chassis was such that there was no change. The units include Buda engines, equipped with Bosch magnetos, Stromberg carburetors and Duplex governors; Perfex radiators, Borg & Beck single plate clutches, Cotta transmission gearsets, Parish & Bingham frames, Sheldon springs and Clark internal gear rear axles.

The Buda engine is the "YU" model, which is four-cylinder, four-cycle, vertical, water cooled, L head type, having cylinder bore of 4½ inches and stroke of six inches. This is rated at 32.4 horsepower by the S. A. E. formula, but because of the long stroke much greater power can be developed. In fact, 45 horsepower is claimed. This type engine is built specially for heavy truck and tractor duty and has practically the same qualities of construction as the model "HU," which was bought in very large numbers by the United States government and specified for construction in the army class A trucks. The engine has considerably more power, however.

Engine Cylinders Cast En Bloc.

The cylinders are cast en bloc from a high quality iron with the water jacket integral, the head of the water jacket being open. This is closed with a large plate, retained by a series of cap screws that has a long, longitudinal channel in the center that increases in depth from rear to front, so that there is a movement of the circulation over the heads of the cylinders. The water jacket is large and the intake manifold is cored into the block, this insuring the heating of the fuel before being admitted to the cylinders. The pistons are fitted with three compression rings and oil grooves to distribute the oil equally on the walls of the cylinders.

The crank case is cast in two sections from fine grade gray iron, the upper section carrying the main bearings and the lower forming the crank case, in which a plate is fitted to form the base of the crank chamber and the top of the oil reservoir. There are forward extensions of both sections that house the timing gearsets and rear extensions that house the flywheels, and to which the clutch housings are bolted.



Side View of the Complete Chassis of the Titan 3½-Ton Internal Gear Truck, Designed Especially for Fast Long Distance Haulage, Having Maximum Speed of 16 Miles an Hour.

The Reciprocating Members.

The crankshaft, a three-journal type, that is heat treated, ground and carefully balanced, is drop forged from a special steel with the flywheel flange integral. The camshaft is drop forged from a high grade steel, with the cams and the timing gear flange integral. This is carefully heat treated, case hardened and ground to size.

The timing gears are large diameter, have faces one inch width, and are helical cut. These are fitted with thrust screws to insure against end play. The connecting rods are heat treated steel drop forgings, that are very heavy I sections, and the wristpins are steel tube, case hardened and ground. The main bearings and crankpin bearings are high grade babbitt in bronze cages, and the camshaft bearings and the bushings of the small ends of the connecting rods are phosphor bronze. The connecting rods oscillate on the wristpins. The valves are tungsten steel and are fitted in long guides. The valve tappets are a mushroom type, with adjusting screws and nuts, that operate in renewable guides, and the entire mechanism is enclosed by cover plates.

Cooling and Lubricating Systems.

The engine is cooled by a circulation of water forced through the cylinder jacket by a centrifugal pump, the water entering the jacket at the base and under the valves. The water is cooled by a Perfex radiator, this having zigzag tube with the top and bottom tanks and the side columns of pressed steel. The air circulation is obtained by a large fan carried on an annular ball bearing on an adjustable bracket mounted on the forward end of the engine block, that is driven by a flat belt by a pulley on an extension of the water pump shaft.

The engine is lubricated by a high pressure system. The oil is taken from a screened intake in the radiator reservoir by a gear pump driven by the camshaft, and forced through tube to the three main bearings and the timing gearset case. From the bearings it is forced through channels in the crankshaft to the crankpins, and thence through tube to the wristpins. The oil is also carried through ducts cast in the crank case to the camshaft bearings. The cylinders and pistons, the cams and the valve tappets are lubricated by the oil distributed by the centrifugal movement of the crankshaft. The excess oil draws to the reservoir. The pump will circulate 1¼ gallons a minute and the pressure is 40 pounds to the square inch at 1000 revolutions. The capacity of the system is 2¼ gallons. An indicator shows the volume of oil in the reservoir.

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Electric Starting and Lighting.

The engine is equipped with a two-unit lighting and starting system, and the source of ignition current is primarily a storage battery that is charged by the generator of the system, and in addition it is also equipped with a Bosch high-tension magneto for use in the event of failure of the other system. The engine is started by the electric current, this being regarded as a desirable feature of trucks. The fuel is supplied through a Stromberg carburetor and the engine is governed by a Duplex governor.

The Borg & Beck single plate clutch is a dry type, the plate being faced with asbestos fabric. The clutch is easily accessible for adjustment, but requires practically no attention. The clutch shaft extends to the Cotta transmission gearset, this being a selective sliding gear constant mesh individual clutch type, having three forward speed ratios and reverse. This gearset is specially designed for truck service, the gears and the shafts being very heavy. The drive from the gearset to the rear axle is by a large tubular shaft with universal joints at either end. The Clark rear axle is constructed with a wide webbed I section expanded center dead axle that carries the load, and to which is bolted the jackshaft housing. The jackshaft pinions mesh with the internal ring gears that are enclosed in the brake drums. The jackshaft differential, the bearings, etc., are entirely housed and lubricated with oil, while the pinions and gears are lubricated by grease. The front axle is a heavy I section steel drop forging.

Details of the Chassis.

The frame is a semi-flexible type, constructed of pressed steel channel section eight inches width, with three-inch webs, and quarter-inch thick, with the cross members strongly gusseted and reinforced. This is suspended on semi-elliptic springs. The rear springs take the torque of the rear axle, but the drive is through radius rods, this construction being an exclusive feature of Titan design as regards internal gear driven trucks. The wheelbase is 162 inches. The wheels are shod with solid band tires, 36 by five inches single forward and 36 by five inches dual rear. The steering column is at the left side.

The control is by foot pedals operating the clutch and service brake, hand levers controlling the ignition and the fuel supply, and hand levers for shifting the gear ratios and the emergency brake. The brakes operate on drums 20 inches diameter and three inches width on the rear wheels, the service brake being external contracting and the emergency brake internal expanding.

The chassis is equipped with a large, roomy fore door driver's cab, fully cushioned and curtained, with two-section windshield, front fenders, running boards, electric dash and tail lamps, mechanical horn, jack and kit of tools. The price is $4300 f. o. b. at Milwaukee, Wis.

T. B. Fogg has been appointed branch supervisor of the Garford Motor Truck Co., Lima, O., and is head of a new department of supervision.

High Cost Will Keep Truck Prices Up Says Burch

A. C. Burch, vice president and director of sales of the Clyde Cars Co., makers of Clydesdale motor trucks, says that any radical price reduction in motor truck prices is absolutely improbable for months to come, probably at least a year.

"Bear in mind," he said, "that the manufacturers of a truck and a passenger car differ radically. A large portion of the manufacturing cost of a passenger car is absorbed in building and furnishing the body. Wood, top and upholstering materials, special equipment and accessories—all these materials enter into passenger car cost, but not to any great extent into truck cost.

"A truck is practically all steel. From 80 to 90 per cent. of truck production cost is absorbed in labor and materials—principally steel. As a result, while passenger car makers may be able to reduce prices somewhat because of reduced cost of some of the materials they use, the truck manufacturer, unless he has heretofore been getting an exorbitant price for his truck, will not be able to do so until the steel and labor market drop. He is absolutely bound by the market prices of these two commodities.

"And as every business man who buys in these markets knows there has been no reduction either in steel or labor, nor is there a prospect of any. Truck manufacturers would like to be able to reduce prices, for it would mean increased volume of business.

"But as the possibility of such reduction is so remote, they feel that prospective truck buyers should know the facts regarding the situation. If a buyer delays purchasing, waiting for a price reduction, and does without the advantages of motor truck haulage now right at the beginning of the period of most intense business competition this country has ever known—at a time when he heeds the economy of motor transportation more than ever before—he is going to lose more than the truck manufacturers by such delay."

TRUMBULL ADVERTISING MANAGER.

Horace N. Trumbull has been appointed advertising manager of the Wellman-Seaver-Morgan Co., Cleveland, O. He was formerly advertising manager of the S. K. F. Ball Bearing Co., Hartford, Conn. He has been in the Engineer Officers' Training School at Camp Humphreys, Va.

RITTER DUPLEX GOVERNOR SALES MANAGER.

George L. Ritter has become assistant sales and advertising manager of the Duplex Engine Governor Co., Brooklyn, N. Y.. having been formerly secretary to the company's president.

NEW MEN JOIN FIRESTONE STEEL PRODUCTS CO.

The sales organization of the Firestone Steel Products Co., manufacturer of solid and pneumatic tire rims, bases for solid tires and the S. A. E. bands, has been strengthened by the addition of three men prominent in the tire industry.

A. D. Droeger assumes the position of manufacturers' representative, in which capacity his duties will carry him throughout the entire country. Mr. Droeger has been a special representative of the United States government, assigned between Washington and Chicago upon rubber requirements for trucks, aeroplanes, balloons, submarines and other war products.

C. W. Flick will cover eastern territory. He brings to his new connection the advantages of training received as assistant sales manager of the Mason Tire and Rubber Co. He also served for some time as assistant manager of pneumatic tire sales with the B. F. Goodrich Co., Akron.

J. C. Bailey becomes western representative. Having a broad acquaintance with various manufacturing lines, his experience has been derived principally from his activities as city salesman and branch manager in Akron, Buffalo and elsewhere. Mr. Bailey comes from the Mason Tire and Rubber Co.

MEXICO MAY SUSPEND POWER VEHICLE IMPORT TAX.

The Federal government of Mexico is expected to issue soon a decree removing all import duties on automobiles, motor trucks and other types of motor vehicles. Dealers in El Paso, San Antonio, Brownsville, Laredo and Eagle Pass would profit greatly with the issuing of the decree.

While the actual orders for motor vehicles will not be placed until the decree is issued, dealers and others are making up lists of possible requirements in these respects, and it is expected that purchases will be made with a rush when the duties are removed.

Although there has been a continuous and large trade in used automobiles in Mexico, it is believed that the time has arrived when the demand for new cars must be filled. This is especially true as to motor trucks. With a revival of mining and other industries in Mexico motor trucks are coming rapidly more and more into use.

It is largely a virgin field for that trade and offers enormous possibilities in the way of expansion.

NEW GENERAL TIRE DISTRICT MANAGERS.

A. M. Whaley, formerly southern district manager for the Kelly-Springfield Tire Co., has been appointed southern sales manager for the General Tire and Rubber Co. of Akron, and will maintain headquarters at Atlanta. Thomas L. Moore, appointed southwestern district manager for the General Tire and Rubber Co., will have headquarters at Dallas.

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Commercial Sale of Class B Trucks Authorized

Manufacturers of parts for the class B standardized truck have been notified by the Motors and Vehicles Division of the Quartermaster Corps that they may make and sell the parts in the open market and may also make and sell completely assembled vehicles.

The government has placed certain rulings to the proposition and they must be kept up to the standard. For example, it is stated that the drawings, workmanship and material must be up to government standards; gauges must be correctly maintained and government has right to purchase such parts in case of emergency.

This action has been taken to forestall the possibility of makers putting in claims for large amounts through the Court of Adjustment. The following letter outlines the plan; it was signed by Maj. A. B. Browne, Chief Truck Section, S. C., U. S. A.:

"You are authorized to manufacture and sell parts of the United States government "B" truck or the complete assembly of the 'B' truck chassis commercially, provided that you adhere rigidly to the following:

"(a) Firms manufacturing and selling the 'B' truck as such for commercial trade, must conform rigidly to the drawings, workmanship and materials specified by the government. Any alterations or variations must be distinctly stated in all commercial literature and publicity.

"(b) Gauges used in manufacture of such vehicles, in order to be authentic, must be checked and approved by the Bureau of Standards in Washington, by comparison with the master gauges there on file. Gauges must be maintained at this standard of accuracy.

"(c) The government reserves the right of free access at all stages of manufacture to its accredited inspectors, to see that the provisions of 'a' are complied with.

"(d) The Motor Transport Corps shall control the designs and specifications of the 'B' truck and these issues each year shall be authority during that year.

"(e) Firms granted permission to manufacture and sell the class 'B' truck or parts must give the government the right, upon immediate notice, to purchase all or such parts as the government may desire or is available for future class 'B' type vehicles should emergency arise.

"(f) The right of export and sales in foreign countries shall be restricted to American manufacturers.

"(g) In all the above, where the term class 'B' truck is used, this shall apply not only to the truck as a whole, but to any assembly unit or part thereof, such as engine, transmission, electrical equipment, or spare parts, and that as future government models develop, wherein designs are initiated and controlled by the government, this policy shall apply likewise to them.

"(h) In granting this permission the government assumes no responsibility and gives no authority under existing or future patent rights."

ANDERSON JOINS MACMANUS.

Theodore F. MacManus, advertising counsel, announces that Lee Anderson, lately vice president of the Hupp Motor Car Corporation, has become associated with him. With this new connection Mr. Anderson passes out of active participation in the manufacturing end of the automobile industry, with which he has been associated for the past nine years. He will, however, be actively connected with automobile and truck merchandising through a number of large automobile accounts handled by Theodore F. MacManus, Inc.

Mr. Anderson is succeeded in administration of Hupp sales affairs by Oliver C. Hutchinson, who joined the Hupp concern in the early part of 1915. Mr. Hutchinson first entered the automobile industry with the old Rambler company in 1906. He has been successively supervisor of wholesale branches and sales manager with Hupp. He was for five years with the General Motors Co.

EVERWEAR CO. BUYS PETLEY PLANT.

The Everwear Rubber Co., Milwaukee, which was organized recently with a capital stock of $200,000 to manufacture a patented semi-pneumatic inner tire, has bought the plant of the Petley Rubber Manufacturing Co., 241-247 Oregon street. The Petley company has been manufacturing rubber bumpers, mechanical rubber goods and specialties.

BECKER MFG. CO. INCORPORATED.

The Becker Manufacturing Co., Two Rivers, Wis., has incorporated its business under the same style, with capital stock of $25,000. The company has operated an iron foundry for many years. Michael P. and Frank T. Becker continue to hold the controlling interest.

Highway Building to Be Given Great Impetus

H. M. Lee, president of the Duplex Truck Co., Lansing, Mich., predicts there will be a great impetus given to road building resulting from the action of the War Industries Board, the Fuel Administration and the United Highway Council in removing restrictions on highway work. Mr. Lee said:

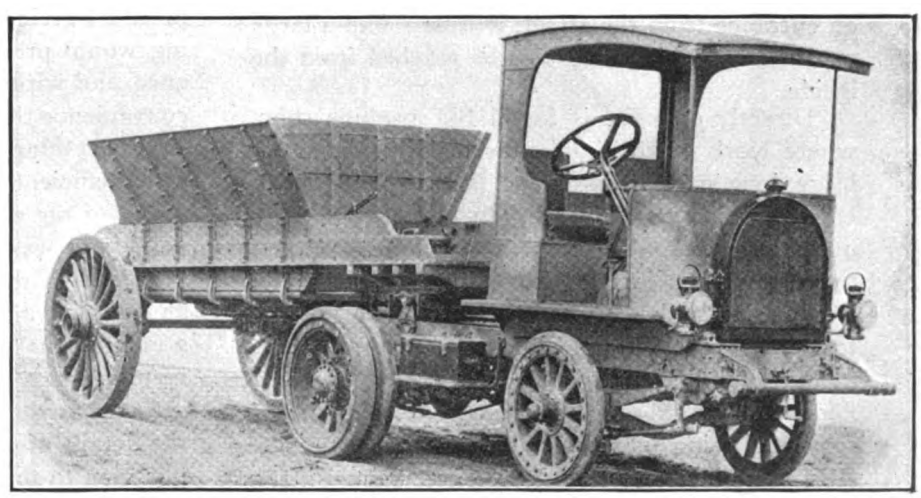
"In view of the fact that motor trucks have thoroughly demonstrated their practicability for road construction work, I believe that hundreds and hundreds of trucks will be used in this service during 1919.

"And improved highways also will promote the use of motor trucks for intercity transportation. With over $100,000,000 of state and federal funds available for road construction purposes, during the next 12 months, thousands of miles of first class roads will soon be completed. Motor truck routes will certainly follow the road builders. And a net work of these routes will soon spread over the states where the highways are to be improved.

"With bettered transportation facilities, food products will become more available—a result that certainly will be appreciated by the millions of city residents. This does not necessarily mean that the farmer will receive less for his products. Prices will drop because transportation costs will be greatly lowered.

"Another benefit to be derived from the road construction program, as now planned, will be the employment for thousands of workers—particularly unskilled labor. Government officials believe it would be better to go ahead with road work wherever it is needed rather than wait for a period of lower prices.

"The benefits of improved highways are immediate, to say nothing of the great desirability of having all labor employed and money active."



Watson Tractor Truck and Bottom Discharging Semi-Trailer—An Equipment Designed Specially for Contractors' Heavy Service, That Have Been Used with Large Economy in Long Distance Haulage.

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PLATE XXVI.

MOTOR TRUCK SERVICE STATION

Structure Designed for Corner Location, Equipped with Every Facility for Efficiently and Economically Serving Truckmen.

SERVICE as demanded by the power truck owner differs widely from that required by the passenger car owner. Many truck dealers have established service stations for serving owners of the trucks they have sold, and have generally sought the patronage of owners of other makes of trucks when service could consistently be afforded.

The power truck service station should preferably be in building erected expressly for the business, for this will mean, if the arrangement of the structure is well thought out, economies of many items of expense, such as lighting, heating, handling vehicles, labor and time, as well as improving the efficiency of the organization and insuring satisfaction to customers.

Necessarily a plan must be definite and specific, and in the accompanying plate the architect has made provision for a structure on an ideal site, but this may be modified and the details may be amended to meet other conditions. The purpose is to suggest what shall be regarded as a structure that will meet all ordinary requirements and afford every desired facility for economical conduct of a business.

The proposed structure is shown on a corner lot, 100 by 100 feet. The dealer will at once appreciate the desirability of selecting a corner location for his building, as it has many advantages for a motor truck service station. Principal among these is the fact that entrances may be had from both streets (see plan), allowing easy placing of trucks for storage.

Special attention to the larger types of motor trucks is given in the design. At the rear, with an entrance from the street, will be found a large repair shop, which may also be reached from the inside.

Directly opposite is found the machine shop, where work of any kind may be carried on. A large door leads from this so that any unit or an entire truck may be carried to the shop for any necessary work. Between the machine shop and the repair shop is a large combination turntable and wash stand. With this trucks may be sent to the repair shop and withdrawn without leaving the building, and there would be no need of floor manouvering that would otherwise be necessary in driving into the repair shop.

Two toilet rooms and a locker comprise the layout in the rear. From the locker room a stairway leads to the boiler room, which occupies a place underneath the machine shop, toilet and locker room.

Ample room for storage is provided in the garage proper. It has been so planned that there are comparatively few columns supporting roof.

At the front of the building will be found the main office with private office and waiting room. A salesroom for accessories and equipment will be found in the corner, having large window areas on both streets. There would be gasoline pumps outside the entrance in the highway.

The structure is of brick, one-story high, with foundations of concrete. The trimmings of the concrete are stone or terra cotta. There is a large wood door on the main street and steel rolling doors on the side elevation. There are also small doors of wood.

Windows are of metal type and of approved design. The roof is of slow burning construction, plank with tar and gravel, supported by steel I beams and C. I. columns of approved design.

A steam wall radiation system is advisable for heating, with pipe or regular radiators. Large skylights are used to give light to the machine shop, repair shop, toilets and locker room.

All floors are of concrete construction. Special attention has been given to provide adequate drainage for the floors in all the departments.

The approximate cost of construction, as shown, would be $12,000.

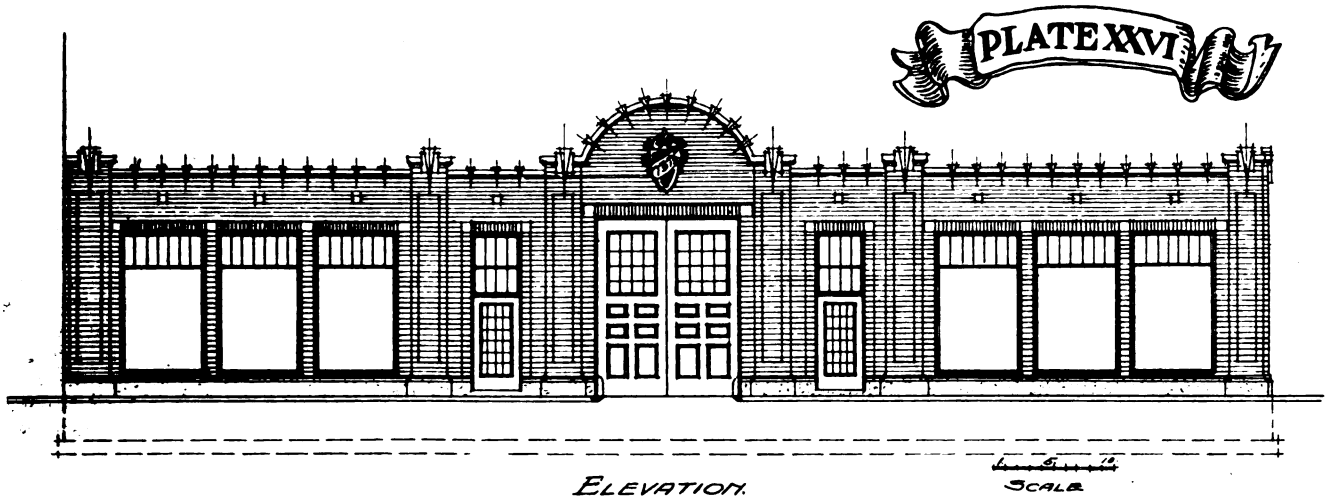
This design presents so many attractive features that the dealer who is planning to erect a motor truck service station will undoubtedly profit by giving attention to its details. The building would present a decidedly attractive appearance, and within there would be practically every convenience that would be necessary or desirable.

Everything is laid out with a view of affording strict efficiency and economy in all operations. Many of the conditions that tend to unnecessary delay and waste of time and labor which are to be found in many service stations, are obviated, and provision is made for handling the trucks in a manner that is bound to bring about successful results.

Any further information in regard to any of the details of construction may be secured by application to this department.

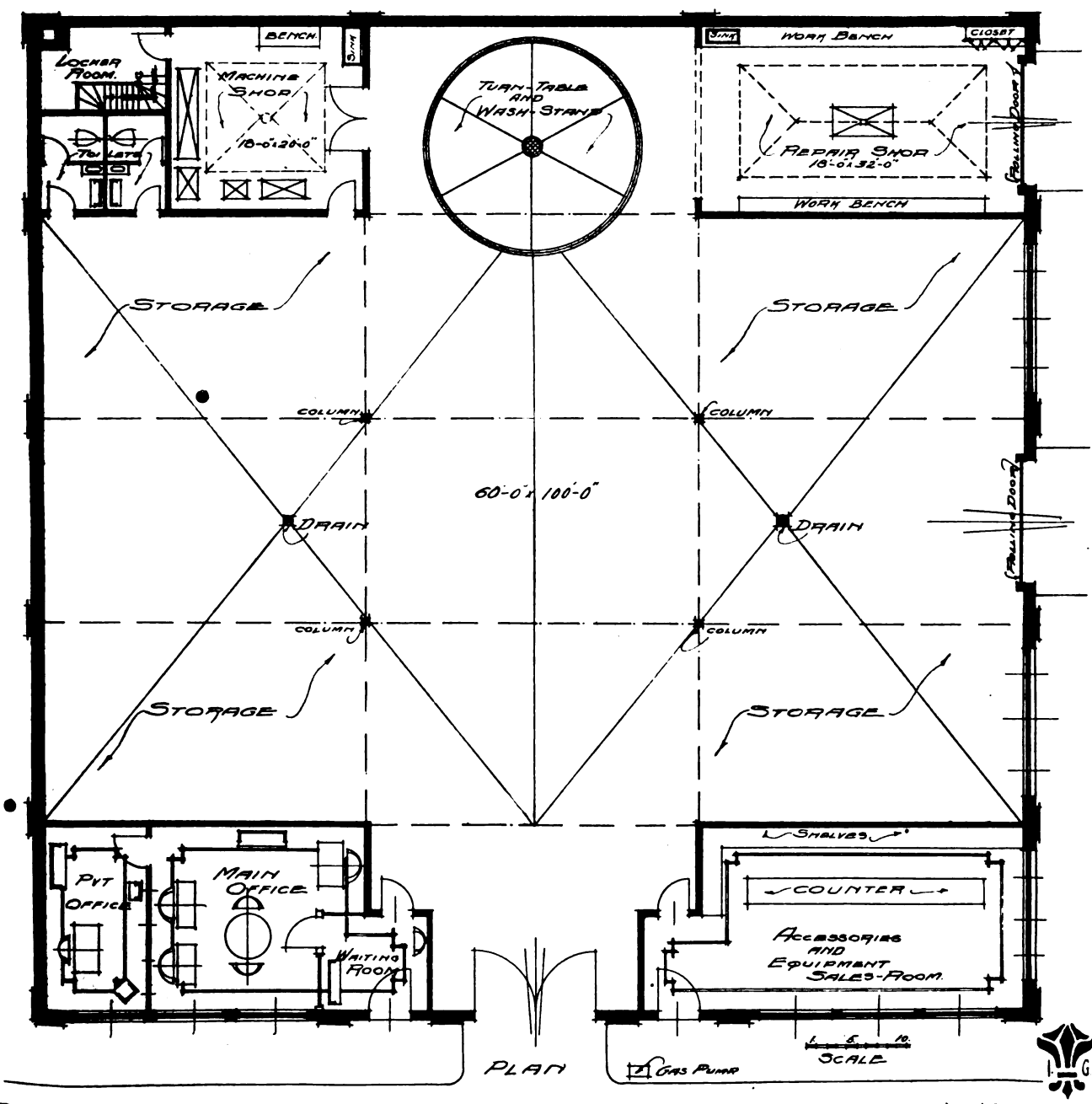
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PLATE XXVI



ELEVATION.

SCALE



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Production of Trucks Nearly 300,000 For 1919

The National Automobile Chamber of Commerce announces the results in the capacity analysis of truck production for civilian use, years 1918 and 1919. The report, which covers all makes of trucks, is as follows:

	1918		(estimated) 1919	
1 ton & under	100,417	47.9%	153,515	54.3%
1½-2½ tons...	79,070	37.6%	88,613	31.4%
3-4 tons.....	25,128	11.9%	21,676	7.7%
5 tons.....	5,079	2.4%	15,907	5.7%
Over 5 tons...	406	0.2%	2,683	0.9%
Totals.....	210,100	100.0%	282,394	100.0%

In connection with the foregoing figures our Mr. C. L. Halladay, chief engineer at the Washington office of the National Automobile Chamber of Commerce, comments as follows:

"It is very evident that vehicle speed is the determining factor which is forcing the decrease in the three and four-ton sizes.

"The five-ton size is equally as fast as the three and four-ton size under practical operating conditions, costs little if any more to operate and load conditions demanding a three or four-ton size can very readily and economically be handled, giving better service with less maintenance cost in the larger size.

"This means that the five-ton size is going to have practically a speed equivalent of the lighter sizes. Truck speed now is not a matter of engineering, but one of legislation for the municipality and road construction for the State Highway Boards.

"I venture to predict that within a period of five years we will have intercity truck freight service, which will maintain an average speed of 20 miles per hour and that the type of truck will be a tractor with semi-trailer—the tractors serving or operating within their own zone of 100 to 150 miles and the trailers running through to destination.

"Standardization of mounting semi-trailers on tractors should be sought and have a very definite place in the minds of progressive truck engineers of today, the dominating feature of which must be adequate length or wheelbase of the tractor so that ample space is provided for centralizing, over the rear axle of the tractor, at least 50 per cent. of the trailer load. Too much load on the trailer axle makes for difficult handling and a consequent loss in road speed. For this reason, legs or jacks are of little value as a means of support when changing trailers to other tractors; means for handling the front end of the trailer must be provided at terminals from overhead.

"The semi-trailer will not be used, except in special cases, other than on the long runs, trucks of the conventional type will act as pickups and deliver the freight to the terminal houses where the trailers will be loaded and dispatched. This will save time and reduce the total investment to an economic point."

N. A. D. A. CONVENTION AT CHICAGO.

The annual meeting of the National Automobile Dealers' Association will take place Jan. 28-29 at the La Salle Hotel, Chicago. Every automobile dealer is welcome. It is pointed out that a membership in a national association is a real business asset.

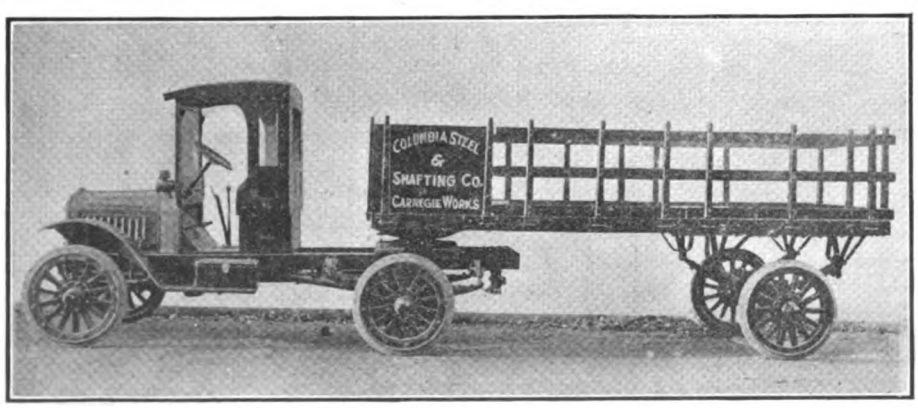
The annual meeting of the Motor and Accessory Manufacturers' Association takes place at the Congress Hotel, Chicago, Jan. 29.

FIRESTONE SALES INCREASED 23.7 PER CENT.

The Firestone Tire and Rubber Co., Akron, O., increased its sales 23.7 per cent. the past year, as compared with the sales the previous year. In 1918 the sales totaled $75,801,219, and in 1917 $61,587,506. Profits for the past year, after providing a liberal reserve for depreciation, taxes, etc., amounted to $8,320,442.

PHILIP GROSS DEAD AT 83.

Philip Gross, founder and president of the Philip Gross Hardware and Supply Co., Milwaukee, died Dec. 21, aged 83 years. The Gross company is one of the oldest and largest motor car accessory and general hardware houses in the northwest.



A Republic Truck Chassis Equipped for Tractor Service Used with a Fruehauf Semi-Trailer, Which Increases the Load Capacity About Three Times That of the Chassis Used Singly.

Soldier Drivers for Trucks Trained in Service

Returning soldiers will boost freight haulage work throughout the country to limits none have ever anticipated, in the opinion of Forrest J. Alvin, general manager of the United States Motor Truck Co. He recently secured figures in Washington showing that 172,691 men were at that time actively employed on the battle front of Europe in the units of the American army's motor transport corps. Many thousands of these, together with thousands who have been employed in America at the same time will elect to remain in the motor truck work Mr. Alvin thinks.

"The men who are 'over there,'" said Mr. Alvin, "and the men who have been employed in truck work for the army in America have learned to value the out-of-door life, and will seek forms of employment in America which will keep them on the same line of endeavor. This is going to give to America a vast army of men who will be fitted to carry on freight hauling throughout the country. Their training has been in fields requiring much more skill than is required on American roads.

War torn roads have beset these men and they have learned by experience to overcome difficulties which would never be met with on this side. I feel that our trained army men are going to return to America and boost freight haulage work throughout the country to limits none have ever anticipated. There will be room for all of them and that they will meet with ready positions upon coming back there can be no doubt. The United States Motor Truck Co. has had reasons to know that more heavy duty trucks of its manufacture would have been put into use had men been available. War work, which has prevented supplying the demands, will soon be gone, and then we shall be able to provide the trucks while the returning soldiers will provide the man power with which to start them in their great work of relieving the railroads of America, and of hastening freight shipments and express with door-to-door delivery, a feature which is going to grow and grow more and more into favor."

TAX ON AUTO SALES NETS U. S. $23,981,368.

The annual report of the Commissioner of Internal Revenue reveals how hard the tax on automobiles hit the manufacturers. The total amount collected for the fiscal year ending June 30, 1918, was $23,981,368.33. The tax was collected on a basis of three per cent. The first Michigan internal revenue district, of which Detroit is the center, paid more than 60 per cent. of all paid in the United States. In the new revenue bill, now pending in Congress, the rate is fixed at five per cent.

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Market Will Absorb All the Trucks Produced

"There is a ready market today for millions of trucks in this country," declared C. R. Dunbar, president of the Clyde Cars Co., manufacturer of Clydesdale trucks, when asked his opinion of what post-war conditions would be. Mr. Dunbar, besides being president of the company, distributes Clydesdale trucks in Massachusetts and surrounding territory. He said there was no fear that the market would be glutted.

"I am a great deal more afraid," said Mr. Dunbar, "that our factory won't be able to produce enough to supply the demand than that it will produce more than can be sold. I have been in the automobile business for a good many years and have had a chance to watch the development of the motor truck industry almost since the beginning. To my mind it has never been a question of the size of the market for motor trucks nor the probable number of purchasers.

"The sale of motor trucks has been limited by the ability of the motor truck sales organizations to prove to each individual buyer that motor trucks would actually effect an economy in his delivery department. And up to within two or three years ago this had not been an easy matter. In many lines of business it could not be done at all. In other lines the margin of profit shown by motor trucks was so small as to leave room for doubt in the purchaser's mind.

"The reason for this was because the motor truck was in a period of evolution. Its life was short, its upkeep high. During the war, however, this situation has been entirely changed. In the first place the motor truck has developed more rapidly during the past four years than it did in the previous 10. The exacting requirements of military service made it absolutely necessary to produce trucks stronger, longer lived and more durable than had ever been dreamed of before. And they did stand up.

"Military use proved to the world that the motor truck is without a rival as an economical means of transportation for all short hauls and even for long cross-country hauling. The public has become convinced of this. Business houses today recognize that they have got to come to motor truck haulage if they are going to be able to compete successfully. Today the motor truck salesman can absolutely prove to practically every business house in every business line that motor trucks will affect a big saving. The longer life and lower upkeep of practically all the leading makes of trucks removes all question of doubt regarding these savings.

"We are impressing on every Clydesdale dealer and salesman that the market for motor trucks is practically unlimited; that with few exceptions every business house of any size in his territory will buy motor trucks eventually; that his business this year is entirely dependent upon how fast he gets around to these business houses and proves to them exactly what motor trucks will do for them today.

"And that furthermore he now has a mass of evidence that will prove this to them without a question of a doubt, if presented properly, evidence in the shape of the records motor trucks made in military service, records which motor trucks have made in cross-country hauling, records which motor trucks are making in the service of thousands of the largest concerns in the country.

"With such proof as this to offer and with a good dependable truck to back it up, no dealer need worry over an over production of trucks. His business will entirely depend upon his own energy and initiative."

EXPORTS SHOW LARGE INCREASE FOR 11 MONTHS.

Total values of merchandise exported to the principal countries during November and the 11 months ended November, compared with corresponding periods of the preceding year, have been made public by the Bureau of Foreign and Domestic Commerce of the Department of Commerce, as follows:

November, 1918, $522,272,604; November, 1917, $487,327,694; 11 months ended November, 1918, $5,584,979,478; 1917, $5,633,377,591.

The total volume of exports from London to the United States during the 11 months ending November, 1918, reached the aggregate of $55,507,405, compared with $121,617,654 for the same period in 1917. Principal exports included rubber to the value of $40,127,996 in 1917 and $3,743,609 in 1918.

GENERAL MOTORS DECLARES THREE DIVIDENDS.

A dividend of $1.50 a share on the preferred stock, a dividend of $1.50 a share on the debenture stock and a dividend of $3 a share on the common stock, payable Feb. 1, 1919, to stockholders of record at the close of business Jan. 15, 1919, have been made by the General Motors Corporation.

Pneumatic Tires in Test Show Big Economies

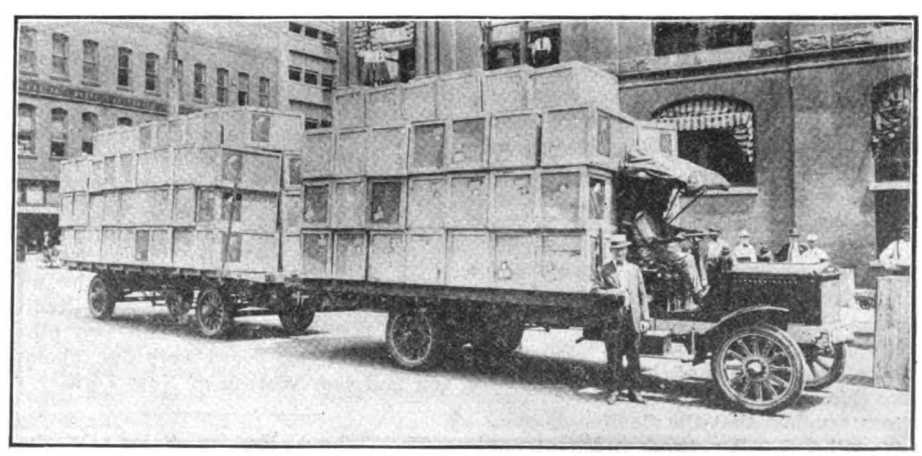
A comparative test to ascertain the relative merits of pneumatic and solid tires on trucks has just been completed by the Ohio Furniture Co., Cleveland, O. Two trucks, identical in make and size, one equipped with pneumatics in front and solids in rear, and the other equipped all around with pneumatics, were used in the test, which covered six months. At the end of the test period the all-pneumatic truck had traveled 6000 miles, or 25 per cent. farther than the other, which had gone 4800 miles.

The report of the test states that repairs on the pneumatic tired truck amounted to $63.09, while the repairs on the truck with solid tires cost $129.55, a saving of $66.46 for the truck with pneumatics. A still greater proposition of saving is shown in the gasoline record, the solid tired truck using 1812 gallons in 4800 miles, whereas the pneumatic tired truck used 1320 gallons while running 6000 miles. This represented a difference of $197.47 at the prevailing rate.

The record adds to the credit of the pneumatics the sum of $55.18, representing a saving in oil, the truck on solids using 504 quarts of oil, or 144 more than the other truck. The company's books show that the driver of the truck on pneumatics saved his employer $161.50 in wages in traversing 25 per cent. more ground than the other truck in the same period.

For depreciation one cent was charged off for every mile run on the pneumatic tires, and three cents per mile on the other, a margin of $84 in favor of the pneumatics. The test showed that the Goodyear pneumatic tires used paid for themselves and yielded a profit of $264.61.

C. L. Fox has returned from the officers' training school at Jacksonville, Fla., to become assistant sales manager of the Saxon Motor Corporation, Detroit. He was training in the Motor Transport Corps.



Handling Bulky Loads Is Best Done with a Truck Used as a Tractor, with a Full Trailer, for Each Unit Can Be Utilized Separately Whenever Occasion Requires, and Both Have Full Economic Value.

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ANNUAL MEETING OF S. A. E. FEB. 4--6

ALL records of the Society of Automotive Engineers are expected to be broken at the Victory Dinner at the Hotel Astor, New York, Feb. 6. It is expected that 2000 members and guests will attend.

The winter meeting, originally planned for Jan. 12-14, was changed to Feb. 4-6 as a matter of convenience to the society's members who desire to attend the New York Automobile Show.

This carry through meeting will be the occasion of illuminating technical sessions on different automotive practises and on fuel for internal combustion engines. A whole half-day session will be devoted to consideration of gasoline, kerosene, benzol and other fuels.

Representatives of the government will present their latest data as to supplies and the results of the recent intensive research of a startling nature. Men of acknowledged authority will discuss this matter from the standpoint of engine design. Many other timely subjects will be discussed. Members returned from the war zone will relate their experiences.

Particulars never before made public concerning war automotive apparatus will be given in papers by members and others in government service.

Four technical sessions will be held Feb. 5 and 6, the Standards Committee making its final recommendations to the society for the current half year Feb. 4. The meeting will be the occasion of the presentation of more valuable papers dealing with the features of the internal combustion engine than any hitherto held. The fact will be made clear that in engine operation the methods of mixing the fuel and getting it into the cylinder are features subordinated in importance to the properties of the fuel itself and to what happens inside the cylinder.

In connection with the relationship of compression, fuel economy and the different types of fuel, many interesting facts almost contradictory to previously accepted theories will be presented and discussed. Changing fuel conditions will necessitate some radical modification of engines and of the mechanical structures on which they are used. Better thermal efficiency must be had.

President Charles F. Kettering will tell of the results of his investigations of more efficient utilization of fuel. Dr. David White, chief geologist of the U. S. Geological Survey, will report on the unmined supply of petroleum in the United States. Dr. E. W. Dean of the Bureau of Mines will speak on the status of refinery practise with particular reference to cracking methods. Dr. J. E. Pogue will give an interpretation of the engine fuel problem. Dr. H. C. Dickinson of the Bureau of Standards, will present a paper on the status of engine efficiency in the United States. An estimate of the extent and utility of Mexican crudes in the near future will be given by E. De Golyer.

The effect of aeronautic engineering practises on motor car design and construction will be discussed comprehensively by H. M. Crane of the Simplex Motor Car Co., Howard Marmon of Nordyke & Marmon and O. E. Hunt of the Packard Motor Car Co. D. McCall White of the Cadillac Motor Car Co. will talk on the high efficiency automobile engine. Thermodynamic cycles of the future will be treated by Sidney A. Reeve. A. Ludlow Clayden will open a discussion on the need for lighter and more efficient cars.

John G. Utz will give historical notes on military truck standardization, and Maj. A. B. Browne is scheduled tentatively to outline some lessons in truck design developed by the war.

Live topics involved in the design and use of tractors on the farm, industrial and military types, are to be taken up. Lieut. Col. Herbert W. Alden will speak on the United States army tanks. Lieut. Col. William Guy Wall will analyze automotive ordnance apparatus. A paper by G. W. Watson on British tanks is expected from England. Edward R. Hewitt will present a paper on the principles of the wheeled farm tractor.

The most spectacular and in a way the most compelling session will be that on aeronautics. John W. Smith will describe the fixed radial cylinder type of aeronautic engine. J. G. Vincent of the Packard Motor Car Co. and until recently chief of the Airplane Engineering Division, Bureau of Aircraft Production, will give an authoritative and complete statement regarding the Liberty engine. An entertaining and illuminating presentation on forest products for aircraft use will be made by Clyde H. Teesdale. Lieut. Alexander Klemin and Grover C. Loening will treat of proportioning planes to engines and of high speed planes respectively.

The Navy Department will cooperate very generously in the program, Commanders H. C. Richardson and F. G. Coburn speaking respectively on airplane and seaplane engineering and production. Starr Truscott will have dirigibles as a subject. It is hoped that Commander J. H. Towers will tell of the operation of naval aircraft. George F. Crouch will speak on the automotive application of marine engines in the war.

The S. A. E. meeting during Chicago Automobile Show will be held in Chicago Jan. 30. An afternoon program will comprise a number of short papers by especially well qualified engineers on truck, tractor and passenger car engines, and a discussion of the possibilities of air cooled engines, as well as of steam engines for automotive purposes. The evening session will be preceded by a home coming supper.

The temporary headquarters of the society in connection with the meeting are at 1410 Marquette building, Chicago, with Francis W. Parker, Jr., in charge.

NO PRICE CHANGE GUARANTEED COMMERCE DEALERS.

The Commerce Motor Truck Co., Detroit, announces that it will guarantee distributors against any reduction in the price of Commerce trucks that may be on order, in transit or on the floor of the distributor, should a reduction in list price be made.

Capt. W. E. Parker, president of the company, said: "We want to take out of the minds of our selling family any uncertainty about price. We are going to produce the same unit that we sold to the government. Our price is right, and we want to take care of the demand. We make this announcement so that our customers can feel that the Commerce company will not sell a truck today at one figure and tomorrow at another. As soon as the uncertainty on price is removed the truck business will go ahead fast."

RUSSEL BACK TO FACTORY AXLE MAKING.

A. W. Russel has taken up his active duties as president of the Russel Motor Axle Co. He has been in Washington for almost a year and a half. In August, 1917, he was made chairman of the Axle Division of the Standardized Truck Conference. When that work was completed the assistant secretary of war asked Mr. Russel to become his assistant, which position Mr. Russel filled during the year 1918. In addition to this work he was appointed a member of the War Credits Board last September. The two other members of this board were Col. Thompson and Col. Warren of New York.

The Inland Empire Sales Co. has opened sales rooms at 406 West Yakima avenue, Yakima, Wash., and will distribute Kleiber trucks.

GOODYEAR'S QUICK CHANGE TO NORMAL WORK.

The transition from a war to a peace basis was effected by the Goodyear Tire and Rubber Co., Akron, O., with little confusion. On the day the armistice was signed there were 3200 persons in the company's departments working on partial government orders, and 4000 others in the preparation of stock and materials for straight government work

Within a few days of the signing of the armistice all of these workmen had been transferred to permanent peacetime operations with so little confusion that less than 12 per cent. of them lost as much as one day from their work.

Among these were 1500 women who previous to the war had never done factory work. The company provided for all of these when it returned to a peace basis.

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STUDEBAKER PLANT TO HAVE 100,000 CAR CAPACITY.

The Studebaker Corporation expects that the construction of the modern new automobile plant, which it started at South Bend, Ind., in 1916, will be completed Jan. 1, 1920. The new plant will have a capacity of 100,000 cars per annum which, with the facilities of the Detroit plants of 60,000 cars per annum, will double the capacity of the corporation and give it manufacturing advantages unexcelled in the country from the standpoint of efficient and economical manufacture.

The new Light-Four cars will be produced at South Bend, while the Detroit plants will continue the production of six-cylinder cars and automobile parts.

The total area of the South Bend buildings will be 2,384,500 square feet, consisting of a machine shop, assembling building, foundry, forge shop, heat treating building, stamping plant, tool room, car testing building and shipping platform. The buildings are of modern type, concrete and steel production, and are grouped to promote the simple, quick and economical movement of work in progress necessary to quantity manufacture and low costs.

Coming at a time when the whole world is faced with reconstruction, this noteworthy expansion of the Studebaker's manufacturing facilities is ample evidence of the corporation's unbounded faith in the future of the automobile industry.

FOREIGN TRADE OPPORTUNITY.

Consular reports, issued by the Bureau of Foreign and Domestic Commerce, Department of Commerce, states that a merchant in Algeria desires to secure an agency for the sale of automobiles and auto trucks of light and heavy construction and limousines. The name and address may be obtained by application to the bureau. The "opportunity number" is 28017 and should be referred to in the application.

Drive Truck Chassis with Aeroplane Power Plant

An unusually interesting exhibition of the great power of the Liberty Motor took place in Cadillac square, Detroit, when on a Packard three-ton truck, on which one of the aviation engines was mounted, was driven around the square and put through manouvers by the power of the air propeller alone.

In order to make the demonstration more impressive the radiator, hood, motor and transmission gearset had been removed from the truck. Spectators were shown that atmosphere, usually regarded as a negligible quantity, is a heavy and dense enough medium for an air propeller to drive a truck weighing 7000 pounds, not only at the speeds of a swift passenger car, but slowly and steadily in abrupt turns, figure "eights" and serpentine curves.



Packard Truck Chassis, Driven by a Liberty Motor and an Aeroplane Power Plant, During a Demonstration of War Products at Cadillac Square, Detroit.

Included in the display, which was part of the Packard war products exhibit of the Detroit branch of the company, were the four Packard aircraft motors, showing the successive steps in the development of the Liberty Motor. The first of these is the Packard "299," built in 1915 and tested out in a racing chassis by Ralph De Palma. The second and third were the "905, the First and Second."

Another feature of the exhibition was a Le Pere plane, designed and built in the Packard plant under the guidance of the French Aviation Mission to America. The plane is equipped with four machine guns, and is said to be the fastest all-around utility and fighting plane yet produced. De Palma's racing car was shown.

Great interest was manifested in a truck, 10,000 of which are in overseas service. The truck is the same that helped to turn the tide of battle at Chateau Thierry by bringing up 50,000 rounds of machine gun bandolier ammunition at a critical time.

Minute inspection of the parts of the Liberty Motor was afforded by one of these motors disassembled.

This was the first public demonstration of the Packard war products. Brig. Gen. L. R. Kenyon and staff of the British army were present. The general is in America to thank manufacturers for contributions of war products to British forces.

WAR DEPARTMENT BUYS TIRES TO COST $1,000,000.

The government has placed orders for $1,000,000 worth of tires with the Goodyear, Kelly-Springfield, Fisk, Firestone and Pennsylvania tire companies. The tires are for motor trucks in this country and abroad. At the same time an order was given to the Trailmobile Co. for 1000 cargo trailers. Orders were placed as follows:

Trailmobile Co., Cincinnati, O., 1000 cargo trailers, $596,000.

Goodyear Tire and Rubber Co., Washington, 5750 casings, 6000 tubes, $230,720.

Kelly-Springfield Tire Co., Cleveland, 2000 tires, $80,680.

Fisk Rubber Co., Washington, 3765 casings, $57,003.50.

Firestone Tire and Rubber Co., Akron, 1965 casings, 5875 tubings, $76,874.25.

United States Tire Co., New York, casings and tubes, $388,112.50.

INCREASE OF TAXES THREATENED IN OHIO.

A proposed law to be presented to the Ohio Legislature would take motor vehicles off the personal tax duplicate and substitute an increase in the registration fees. The plan is to return half of the money so secured to the communities in which the taxes originate. The object is to tax automobiles and other motor vehicles to provide for highway improvement and repair. It is claimed that the plan is legal and workable if the recently adopted constitutional amendment classifying property for taxation is upheld by the courts.

WANT CANADIAN WAR TAX SUSPENDED.

Representatives of the organized automobile industries of Canada waited on Sir Thomas White, acting prime minister, and Hon. A. K. MacLean, acting minister of trade and commerce, and urged that the excise war tax on automobiles be removed. The tax is 10 per cent. on automobiles and is applied to all imported into or manufactured in Canada and unsold on April 30, 1918. The request of automobile manufacturers at Ottawa is being considered.

TRUCK OWNERS ORGANIZE EMPLOYMENT BUREAU.

The Motor Truck Owners' Association of Philadelphia is considering the formation of a central employment bureau for reliable chauffeurs and other employees. With a view of opposing high insurance rates on trucks the association is collecting data on insurance risks.

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MERCHANT & EVANS CO., SPECIALTIES

POWER transmission efficiency in highway vehicles depends in large measure upon the clutch that couples the system to the engine. This statement is the more significant when one realizes that assuming a given volume of fuel for an internal explosion engine to be 100 per cent. productive of power, in an average engine functioning normally, but 20.8 per cent. of the power can be realized. Of this only 12.5 per cent. is available for car propulsion, and from this must be deducted the degree of power necessary to meet air resistance.

Obviously every additional loss means reduction of power production. Power is very necessary in truck work because loads must be hauled, and increased fuel consumption added to the operating expense. But this is only one aspect. The clutch must be theoretically not only positive in action, so that there shall be no loss by slippage, but there must be easy engagement limited only by certainty of driving. By this is meant that the easier a clutch will engage and yet drive positively the better.



"Evans" Model "Hele-Shaw" Clutch, the Complete Assembly and the Case That Is Bolted to the Engine Flywheel, Fitted with an "M. & E." Grease Cup.

The reason for this is that when starting a vehicle or when changing gear reduction ratios when the vehicle is moving there should be no sudden engagement of the clutch. The engagement should be gradual, for any perceptible jar or shock must necessarily stress the entire transmission system, the clutch itself, the transmission gearset, the shafts, the differential gearset, the axle shafts, the wheels and the tires in ratio to the degree of shock. One can understand that should a clutch be engaged quickly with the engine running at top speed and the vehicle standing, the result might be very destructive, and could be likened to driving the machine against an immovable object, but instead of the frame first striking and in turn each unit being damaged by the impact, the transmission system must endure the stresses principally, and the other parts of the machine in lesser degree. So much for clutch action.

The Evans "Hele-Shaw" Clutch.

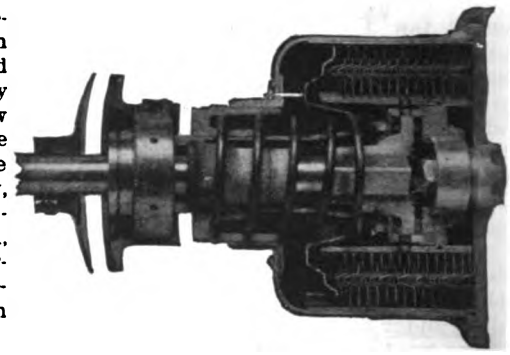
Claim is made by the Merchant & Evans Co., maker of Evans model "Hele-Shaw" clutches, that these have been proven the most efficient, enduring and practical type clutch ever produced by automotive engineers. The Hele-Shaw clutch design is not new in the sense that it was recently developed. It is the patented invention of Prof. Hele-Shaw, one of the most prominent English engineers. The "Evans model," so-called, is the type or design built by the Merchant & Evans Co., which differs somewhat from original types and has been highly perfected.

The "Evans model" is claimed to have quality not obtained with any other clutch. It is in effect a casing bolted to the flywheel of an engine, that encloses and turns a series of high grade phosphor bronze plates. The clutch shaft is centered in this casing, the forward end being carried by a ball bearing. On this shaft is a series of steel plates, each of which is between bronze plates.

When the plates are pressed together the entire series is practically a solid pack and the movement of the engine is continued through the clutch to the transmission gearset and the driving system. The form of the plates is unusual, each having a large V shape groove encircling it, so that the surface area in contact is very largely increased as compared with flat plates of similar diameter. The inside of the casing is ribbed, the ribs engaging with notches in the circumferences of the bronze plates, and the squared end of the clutch shaft carries a core that has splines that engage with notches in the inner circumferences of the steel plates.

Clutch Spring Easily Adjustable.

On the shaft is a slidable bushed sleeve carrying a presser plate at the forward end, thisp late forcing the discs into contact when under pressure of the main spring, the rear end of the spring being held by an adjusting nut screwed into a boss at the end of the clutch case.

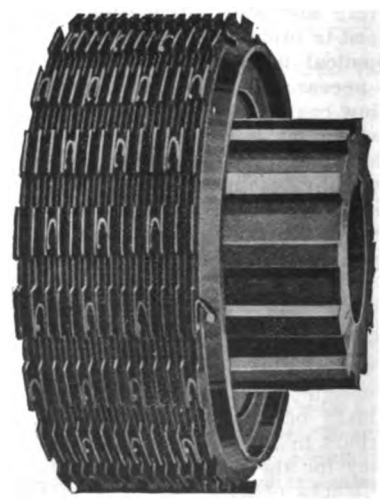


Sectional View of the "Evans" Model "Hele-Shaw" Clutch, Showing the Complete Assembly.

This nut is secured by a cotter pinned key which can be readily disengaged for adjustment.

The presser plate is operated by the "actuating ring," which has two trunnions engaging with the pedal lever. As the movement of the pedal releases the spring pressure the clutch plates are separated by small flat springs fitted to the outer circumferences of the bronze plates. The actuating ring has a brake that is operated by the pedal lever that prevents the clutch spinning, and this brake is adjustable to compensate for wear of the plates.

As the clutch casing is oil and dust tight and the clutch runs in a bath of oil, there is comparatively little wear. When the pressure of the spring is applied to engage the clutch the oil is forced from between the plates and the driving effort is gradual, there being no possibility of shock that would cause stresses upon the transmission system. The wedge-shape grooves not only increase the area, but strengthen the plates as well, and the grooves are so designed that there is in effect practically the same result as is obtained in the wedging action of the cone clutch.



The Steel Core That Carries the Steel V Shape Discs, Driven by the Clutch Shaft, with the Phosphor Bronze and Steel Discs Assembled, Withdrawn from the Clutch Casing.

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So far as the wear is concerned the ball bearing of the actuating ring endures practically all the load, both radial and thrust, and is very long lived.

The clutch is extremely simple and the number of parts have been minimized. The claim is made that they are the lightest and strongest made and are especially efficient in reducing the cost of operation through minimizing the stresses upon tires.

Used in All F-W-D Trucks.

With reference to truck practise, statement is made that these clutches and Evans alignment joints, also made by the Merchant & Evans Co., are used in all F-W-D trucks, which were bought in large numbers by the British government after exhaustive tests, and by the United States government after experience during the Mexican border campaign. Later on the government contracted for thousands of these trucks, which were built by the Four Wheel Drive Co., at Clintonville, Wis., and under license by the Premier Motor Corporation, Indianapolis, Ind.; the Mitchell Motors Co., Racine, Wis., and the Kissel Motor Car Co., Hartford, Wis. These trucks were used for all kinds of hard service in France.



The "M. & E." Grease Cup, with the Top Raised to Show Spring.

The three-ton artillery tractor, standardized by the War Department and known as model "T. T.," now being built by the Militor Corporation, Jersey City, N. J., and the Packard Motor Car Co., Detroit, are four wheel driven. For these Evans Hele-Shaw clutches are specified and these concerns contracted for these clutches. The clutches are also used in the armored gasoline locomotives built for the government by the Baldwin Locomotive Works of Philadelphia and the George D. Whitcomb Co., Rochelle, Ill., and the spraying apparatus built by the Fitzhenry-Guptill Co., East Cambridge, Mass., for the United States Department of Agriculture and Massachusetts State Board of Agriculture, the only apparatus of the kind in the world, is equipped with Evans Hele-Shaw clutches and with Evans alignment joints.

Evans model "Hele-Shaw" clutches are used by a number of truck manufacturers, including the Sterling Motor Truck Co., Milwaukee, Wis.; Lange Motor Truck Co., Pittsburgh, Pa.; Corbitt Motor Truck Co., Henderson, N. C.; Oneida Motor Truck Co., Green Bay, Wis.; Kleiber & Co., San Francisco, Cal.; Ware Motor Truck Co., St. Paul, Minn., and similar equipment is used by the Martin Truck and Body Corporation, York, Pa., for fire apparatus; by the Morton Truck and Tractor Co., Harrisburg, Pa., and the Devon Engineering Co., Philadelphia.

The Merchant & Evans Co., similarly specializes the production of "Evans" universal joints, an exceedingly simplified construction that has been very generally approved by the automotive industry and is widely used. This joint is made in five sizes to meet all engineering requirements and exceptional measure of endurance is claimed for it. These joints are included in the units used in the construction of a considerable number of trucks.

Another specialty is "Evans" alignment joints, which will compensate up to eight degrees in variability of movement, and are dust proof and grease tight. These are used in very large number in the automobile industry and for transmission of power in power yachts and for other machinery.

Still another specialty is the "M. & E." grease cup, which has a ratchet top so as to prevent the loss of the top when subjected to vibratory or other stresses, and has been adapted as standard equipment by a considerable number of power vehicle builders. The cups are extremely well made and are fitted with internal helical springs, the top ends of which are so formed that they serve as pawls, catching in corrugations on the insides of the tops of the cups. These are made in five sizes, varying in capacity from a quarter ounce to two ounces. These grease cups are standard equipment with the trucks produced by the Packard Motor Car Co., the Autocar Co., Tiffin Wagon Co., Stegeman Motor Car Co., the Rowe Manufacturing Co. and other well known concerns.

FULTON TRUCK PLANT EXPANSION.

The Fulton Motor Truck Co., Farmingdale, L. I., New York, plans additions to its plant that will result in doubling its capacity. The plant already comprises nearly a score of buildings constructed in the most modern fashion for manufacturing. This year is expected to see a wonderful business for the company's 1½-ton trucks.

The saw-tooth buildings, all connected and without partitions, provide a model plant in which the activities today draw most favorable comment from visitors to the plant.

FORD TWO YEARS BEHIND ORDERS.

After being closed more than a week, the Ford Motor Co. plant in Highland Park, Mich., reopened Jan. 2. During the shut down the factory was rearranged for post-war work. An effort will be made to turn out 4000 automobiles a day. This would be 1000 a day more than the average output for normal times. Officials say that the plant is two years behind in its orders.

The Monroe Motor Co., Pontiac, Mich., will be sold on Saturday, Jan. 25, 1919, by the receiver, Robert T. Armstrong. The factory contains 100,000 square feet of floor space.

Prescott C. Ritchie, western representative of the Westinghouse Automobile Equipment Department, has moved his headquarters from Indianapolis to the Conway building, Chicago.

GOODRICH MANAGER PRESENTED DIAMOND.

Manager Frederick T. Moore of the New England branch of the B. F. Goodrich Co., was presented with a diamond ring, valued at $500, as a testimonial from the Goodrich employees. He was called into the big salesrooms in the Boston building and was given the ring in the presence of all the employees and the heads of the sub-branches in other cities.

His brother, W. T. Moore, who has been assistant branch manager, has been promoted to take charge of the Pittsburgh branch. Before leaving for Pittsburgh he was tendered a dinner, followed by a theater party, and he was presented with a traveling set.

PARDEE IS DIAMOND T WESTERN SALES MANAGER.

F. J. Pardee has assumed the duties of western sales manager of the Diamond T Motor Car Co. and will open headquarters in San Francisco. For the past three years he has been general sales manager for the company at Chicago. A. J. Whipple, who has been a special representative of the company in Washington, D. C., has been made general sales manager.

ACME TRUCK MEN OPTIMISTIC IN CONVENTION.

The Acme Motor Truck Co., Cadillac, Mich., has just held a three-day convention, attended by distributors and representatives from all sections of the country. Reports indicated that the demand everywhere is such that there will be no difficulty in selling the year's output. The export business will be increased. The company is considering plans for enlarging the plant and increasing production.

DAILEY IS GENERAL MANAGER.

E. G. Dailey, assistant treasurer of the City of St. Louis, has become general manager of the Harry Newman Corporation, which is placing on the market an assembled truck under the name "Pioneer."

GREENE GOES TO CHICAGO.

R. E. Greene has become associated as manager of the Chicago branch of the Goodyear Tire and Rubber Co. He was formerly manager of the Des Moines branch and was succeeded there by Larry Briggs of Milwaukee.

The General Steel Co., Milwaukee, Wis., manufacturer of die blocks, piston rods and tool steel, will be represented in the Michigan district by D. J. Crowley, Detroit.

Graham W. Brogan, formerly advertising manager for the Duesenberg Motor Corporation, is now advertising manager for the Black & Decker Manufacturing Co., Baltimore.

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INDUSTRY WILL BOOM, SAYS W. L. KISSEL.

W. L. Kissel, secretary and treasurer of the Kissel Motor Car Co., is confident that the automobile industry will boom this year. "The car proved the utility of this 20th century carrier," he says. "Its ability to meet emergency tests in war time will give it the right of way in peace time. This proven efficiency and economy has made the purchase of automobiles a strictly business proposition, just as the purchase of any other time or labor saving utility. The purchaser is buying transportation—so many miles of economical and comfortable travel—a commodity he must have in order to keep up with the present times."

LARGEST LABOR EMPLOYER IN DETROIT IS PACKARD CO.

The 1918 industrial census by the Michigan Department of Labor shows that the largest employer in Detroit is the Packard Motor Car Co., with a total of 10,781 men and women. The Cadillac Motor Car Co. comes second, with 9120 men and 184 women. The Fisher Body Co. ranks third, with 6948 men and women, more than three times greater than the previous year.

The report is of March 31, 1918. The period of time covered runs into a series of changing conditions, covering the wider employment of women and the conversion of factories from peace or semi-war output to a 100 per cent. war basis.

The report fails to cover several of the largest and most important plants, such as the Ford Motor Co., Maxwell Motor Co., the Russell Motor Axle Co. and others. The figures of some of the Detroit industries follow with comparisons for the previous year:

Name of Company	Product	Employees 1918 Male	Employees 1918 Female	Employees 1917 Male	Employees 1917 Female
Acason Motor Truck Co.	Trucks	75	4	17	..
Bower Roller Bearing Co.	Bearings	328	3	244	..
Clayton & Lambert Mfg. Co.	Sheet metal	225	32	525	121
Commerce Motor Co.	Trucks	138	3	61	..
Continental Motors Corp.	Motors	3,433	64	2,089	63
Denby Motor Truck Co.	Trucks	119	14	117	6
Detroit Lubricator Co.	Brass Goods	855	50	867	37
Disco Electric Starter Co.	Starters	104	2	52	12
Federal Motor Truck Co.	Trucks	480	40	325	29
Golden, Belknap & Swartz Co.	Motors	125	5	81	5
Signal Motor Truck Co.	Trucks	82	7	58	4
Timken-Detroit Axle Co.	Axles	4,604	100	4,324	61
J. C. Wilson Co.	Trucks	94	9	84	7

VELIE COMPLETES ALL WAR CONTRACTS.

All war contracts have been completed by the Velie Motor Corporation, Moline, Ill., after four years of activity, begun in 1914, when representatives of the French government placed with it orders for 2000 motor trucks. One thousand more were sent to the Mexican border in 1916 for the use of United States troops. When the United States entered the war many thousand more trucks were ordered.

The company supplied 3000 Liberty trucks, and later an order was received for 1000 ¾-ton trucks. Trailers were also manufactured for the heavy trucks.

Twenty-five thousand small carts for carrying machine guns to their emplacements and to handle ammunition and other supplies were also turned out by the company. The order for carts alone aggregated $3,000,000. The total of contracts handled during the war amounted to $10,000,000, but this does not include the contracts handled prior to the entrance of the United States into the world war.

The plant is now being operated on a peace basis.

FORD GETS NAME REGISTERED ON AUTO TIRE.

Henry Ford has succeeded in registering the name "Ford" for a tire. The Examiner of Trade Marks rejected the application on the ground that "Ford" was merely the name of an individual. Henry Ford appealed this and the Commissioner of Patents held that the word "Ford" was an index of a reputation and a mark of origin. Besides being a personal victory for Ford, it means that no one else can bring out a "Ford" tire.

DETROIT WEATHERPROOF CABS FOR TRUCK CHASSIS.

Detroit weatherproof cabs for motor trucks have many features that are bound to make a strong appeal to the driver of a truck. They may be completely enclosed during stormy weather or converted in a very short time into open cabs. They keep out snow, rain and bitter cold winds, yet allow the driver to signal traffic with his hands.

These cabs also appeal to the truck owner, as he realizes that his driver will be a more efficient worker if properly protected from the frigid weather, and that the chauffeur will keep the truck more steadily in operation if the cab is weatherproof.

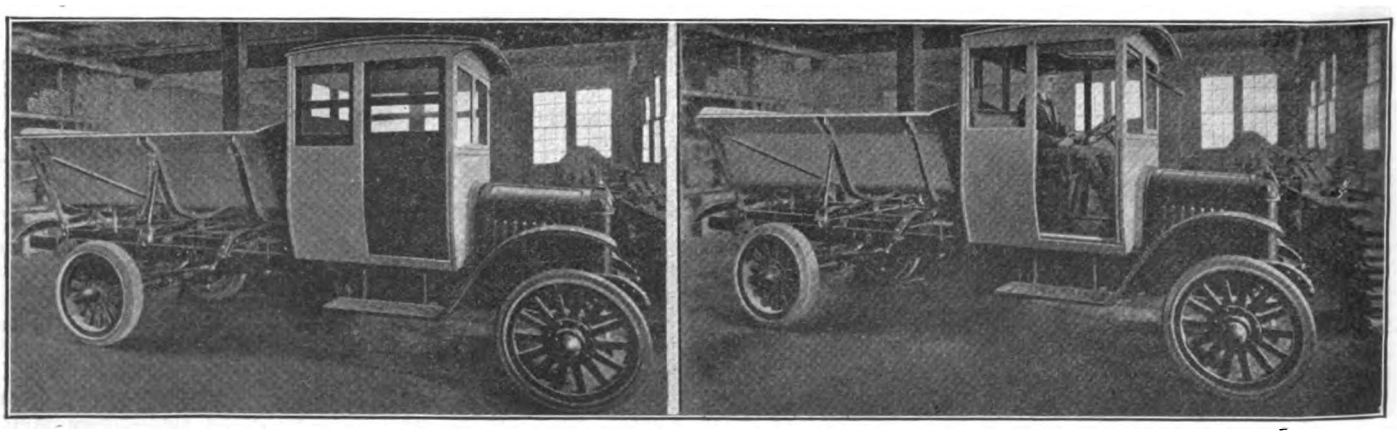
Truck manufacturers, too, have taken the truck drivers into consideration, and each year an ever increasing number of trucks is being equipped with weatherproof cabs as standard equipment.

Detroit "Weatherproof Cabs" are constructed of wood and heavy gauge metal, insuring strength and light weight. They are equipped with light, strong, patented doors that slide into the tops where they are out of the way when not in use. The doors are so fitted that they do not rattle. The windows are constructed to slide upward, permitting the driver to peer out or signal traffic.

The windshields are divided into two sections. The section directly in front of the driver may be opened, allowing the other section to remain closed. There is plenty of seat and leg room. The upholstery is comfortable and atractive.

The doors and windows are the most distinctive features. The window and door frames are made of spring steel, covered with leather, and slide in deep metal channels, serving the double function of guides and weather strips. Spring steel is used to permit the door frames to follow the radius of the channels into the top deck of the cab. When open the doors lie flat in the deck overhead and cannot rattle or break. The windows drop down in metal channels into the body of the cab.

J. F. Bowman has succeeded S. M. Williams as sales manager of the Garford Motor Truck Co., Lima, O. Mr. Williams has taken charge of the company's new highway development department.

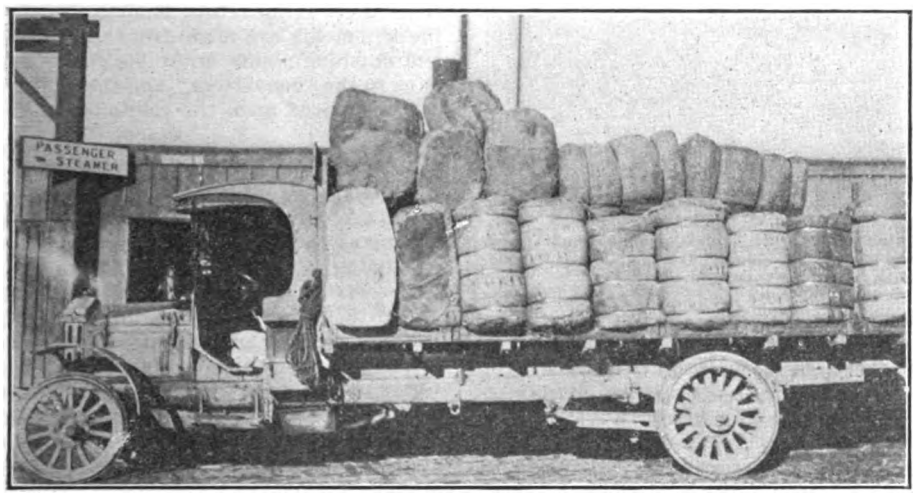


Truck Chassis Cabs Built by the Detroit Weatherproof Body Co., That at the Left Showing the Doors and Windows Open and That at the Right the Cab Fully Open for Summer and Pleasant Day Work.

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SPECIALIZED TRUCK MILL WORK

E. P. Winward & Son, Fall River, Mass., Operate Fleet of Nine Pierce-Arrow Units for Fabric "Converters" and "Rigging", Two Distinct Services Developed by That Firm



One of E. P. Winward & Son's Five-Ton Pierce-Arrow Trucks Loaded with Baled Cloth, Hauled from New Bedford, at Winward Storehouse in Central Street, Fall River.

SPECIALIZATION is more productive than generalization, and this fact is as true in power truck operation as in any other enterprise. General haulage contracting with power trucks is engaged in by thousands, and with rare exceptions competition is keen. Specialization seemingly has limitations and few men operating as haulage contractors are willing to confine their operations to any specific class of work, assuming that they will lose opportunities that may be profitable.

Neither have they the initiative to undertake development, but will follow the lines of least resistance. This statement can be applied to hundreds of instances.

This story has to do with a concern at Fall River, Mass., which operates a fleet of trucks in what is very largely specialized haulage, but which also undertakes general work. The company is E. P. Winward & Son, originally founded by E. P. Winward, who was a "rigger." For years Mr. Winward operated with horses, having from 65 to 70 animals, and practically all of his work was within the city and its suburbs, being generally for mills. The industries of Fall River are almost exclusively textile manufacturing, either making yarns or fabric, or printing cloth, and these products are all the coarser grades, in sharp contrast with New Bedford, 14 miles distant, where a very large number of mills are producing the finest grades of yarn and cloth. Fall River is the largest textile manufacturing city in America.

The removal and installation of machine equipment, changes incident to mill construction, reconstruction, alteration and repair, are not undertaken by any of the manufacturers, no matter how large or complete their organizations, and for practically a lifetime Mr. Winward operated so as to meet the requirements of nearly all the Fall River mills. Other work was engaged in, this being what is generally classified as heavy trucking, including the haulage, installation or removal of safes, boilers, stacks, machinery and the like.

Wanted a Field for Specialization.

Mr. Winward retired and the business he had developed was discontinued. James F. Winward, his son, was for a number of years engaged in merchandising textiles in New York City and because of this had a very good idea of the methods of mills, sales representatives, commission houses, brokers and finishing and dyeing concerns for the distribution of fabric from the time it is taken from the looms and prepared for marketing until it reached the consumers. He was in England the first year of the European war and returned to this country with the determination to capitalize so far as possible his knowledge of textiles.

He did this by returning to Fall River, where he had lived until after his graduation from Harvard and where he had been associated with his father for a year or more. He decided to revive the old firm name, which was widely and favorably known, and to establish himself as E. P. Winward & Son, to engage in "rigging" and heavy haulage. As a preliminary he purchased a business that operated about 40 animals, all in local trucking operations.

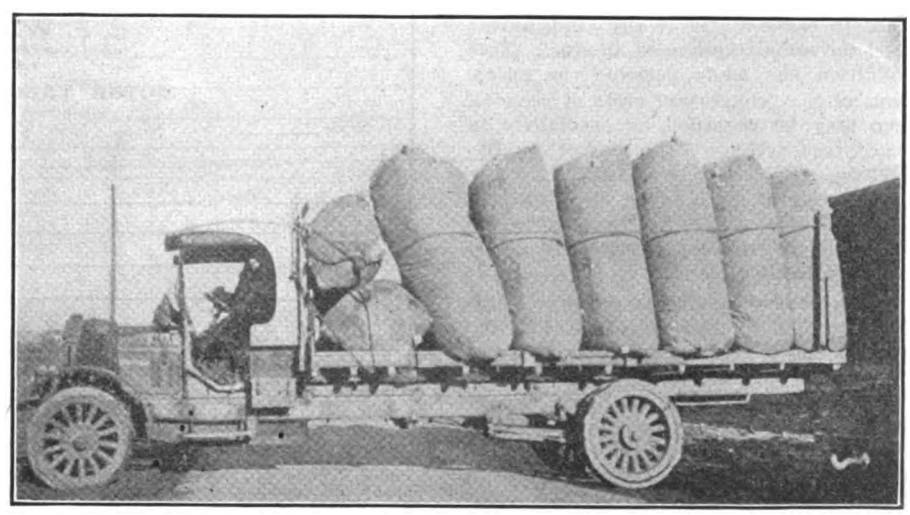
Retardation of Rail Shipments.

It was his intention to use horses for a few months at most, and he purposed to develop "rigging" to the fullest extent as one department and to operate another as a haulage contractor. He was a believer in specialization, but was by no means certain of what would best repay his endeavors. He learned that "cloth converters" were having a great deal of difficulty in handling their business through general congestion of rail and water transportation, and this appeared to him to be a condition that might be profitably exploited by affording this particular class a special service.

"Cloth converters," as they are known in the textile industry, are brokers, many of them established in New York and other commercial centers, who carry on actual transactions with manufacturers of men's and women's apparel, the volume ranging from a few to a considerable number of bales or cases, according to requirements. The "converters" deal directly with the mills, buying fabric "gray" or unbleached as it is taken from the looms, and sending it to dyeing and finishing companies to be dyed and finished to specifications, after which it is delivered to the garment makers ready for manufacture.

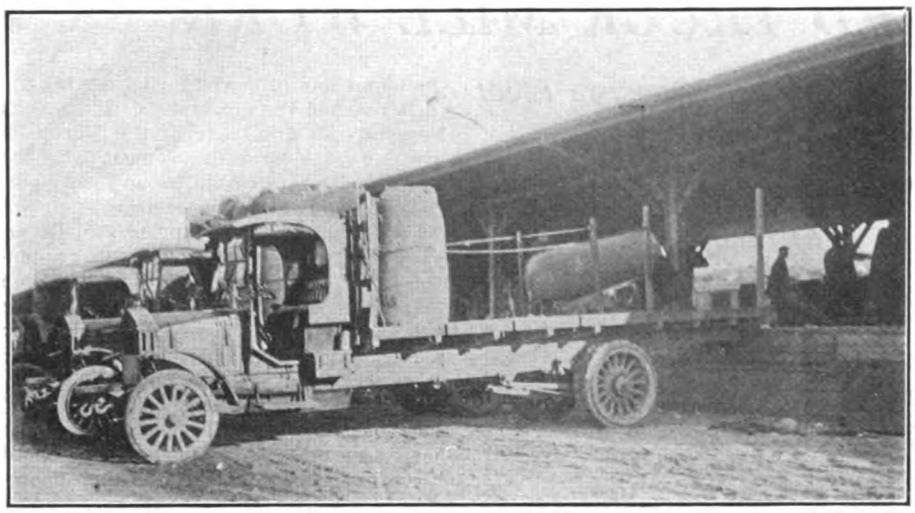
Dyeing and Finishing Different Work.

There are innumerable uses made of



A Winward Truck Loaded with Bales of Cotton, This Very Bulky Load Weighing Approximately Three Tons—This Class of Haulage Is Generally Local.

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Three Winward Five-Ton Trucks Loading Baled Cotton at the Watuppa Station of the New Haven Road, This Being a Receiving Point Especially Designed for Quick Handling, with Ample Platform and Vehicle Space.

the coarser fabrics produced at Fall River. The mills making fabric do not as a rule dye or finish it. Various conditions are essential for both dyeing and finishing, particularly supplies of water, and in different parts of Massachusetts, Rhode Island and Connecticut are plants that receive fabrics from the weaving mills, or yarns from the yarn mills, dyeing or finishing them to order. Thus there may be said to be two distinct branches of the industry.

Were fabric mills to undertake to produce all the different colors and finishes of goods desired by buyers there would be innumerable changes in manufacturing processes and the prices would be necessarily higher than now, when any volume of a given quality or "style" of cloth can be sold "gray" and the buyer can have whatever color or finish desired by contract with the dyer or finisher. For these reasons the custom of the "converter" is to buy from the mill, have the fabric dyed or finished to specification, and shipped to his customers.

Why the Small Transaction Specialist.

The requirements of the garment manufacturers are constantly changing. They prefer to buy in approximately sufficient volume to meet any order, but do not want to carry fabric of any kind, unless used for some staple need, in stock. This condition has made possible the operations of the "converter" class of brokers, who may be regarded as specialists in small transactions. The converters frequently will have several orders for the same grade of cloth to be dyed and finished to different specifications,necessitating shipment from one fabric mill to two or several other plants.

Much depends upon the delivery of orders handled by these brokers, and for that reason a proposition made to some of them by Mr. Winward, that he undertake haulage from the Fall River or New Bedford mills to the dyers or finishers, met with such encouragement that he bought a five-ton Pierce-Arrow truck in April, 1917, and began the development of a business that has so increased that he now operates a fleet of nine trucks and three smaller machines. The nine trucks are all Pierce-Arrows, one of these being two-ton.

Hauls for Varying Distances.

The finishing and dyeing plants to which the fabric is sent are widely scattered, being at Philipsdale, R. I.; Providence, R. I.; Pawtucket, R. I.; Saylesville, R. I.; Apponaug, R. I.; Woonsocket, R. I.; Bradford, R. I.; Westerly, R. I.; Fitchville, Conn. (near Norwich); Jewett City, Conn.; Sterling, Conn., and at various other points. Philipsdale, Providence, Pawtucket and Saylesville are within a 22-mile radius of Fall River, Woonsocket is 34 miles distant, Apponaug is 28 miles, Bradford is about 60, Westerly 74, Fitchville, 72, Jewett City 63, Norwich 67 and Sterling 48. For haulage from New Bedford 28 miles must be added to these distances, for the trucks are sent from Fall River to that city and return close to or through Fall River.

In Fall River are something like 125 mills. There is not as large a number in New Bedford—perhaps 50 would be a fair estimate. Not all of the mills do business with the "converters," but many of them do. With the first truck the service afforded was so satisfactory that numerous customers were obtained and at frequent intervals the fleet was added to until about the middle of last year the last unit was acquired.

One must understand that while the work was to contract the volume of haulage varied greatly. For instance, one order might require several trucks to go to one plant and others might necessitate single loads being divided between several destinations, which might be considerable distances apart. With rare exceptions there is no return haulage because the shipments are made from the dyeing and finishing plants to the buyers or perhaps to the "converters," and the charges are dependent upon the character of the service.

Insurance Covers All Shipments.

As might be assumed, the value of the loads are large, in some cases running into many thousands of dollars, and there was liability of loss or theft. While some mills carried blanket insurance that protected them there was need of protecting the "converters" and himself, and this impelled Mr. Winward to obtain a special form of insurance that covered all cargoes in transit up to a maximum figure, which was provided for in the freight charges, but additional insurance could be obtained by special provision with the insurance company when such coverage was desired. Some mills were inclined to take risks, which led to the attitude by Mr. Winward that he must have protection, and that freight accepted must be covered by his insurance. This form of insurance may be likened to what is known as marine risks, being much the same as was later obtained by the Rhode Island Commercial Economy Board of the Rhode Island Council of Defense for the benefit of shippers and those engaged in contract haulage in the state. Mr. Winward's experience with insurance prompted the inquiry of that board into protection that might be obtainable.

Two Records Serve All Shippers.

Shipping records were absolutely essential and Mr. Winward devised a shipping receipt, printed in quadruplicate on white, yellow, pink and blue paper, which in

TELEPHONE 3010 — All Goods in Transit fully Insured — P. O. BOX 499

E. P. WINWARD & SON

METACOMET BANK BUILDING
FALL RIVER, MASS

MOTOR TRUCK FREIGHT SERVICE

Style _____ _____ 191

Received of _____ *in good order and condition*

_____ *Bales* _____ *Cloth, numbered*

_____

_____

_____

for account of _____

Shipped to _____

_____

Receipt No. _____ *Received by* _____

Truck No. _____

The Winward Shipping Receipt, Made in Quadruplicate on Different Colored Paper, Copies Being Retained by the Mill, Sent to the "Converter" and to the Finishing or Dyeing Company and One Is Held by the Truck Driver.

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Date.....191

Truck No.....

Left Garage Morning.....A. M.

Entered Garage Night.....P. M.

Truck not in use.....hours

Speedometer.....

Gals. Gasoline purchased at.....

Gals. Kerosene purchased at.....

Oil taken.....

Paid out.....for.....

Remarks:—

Driver.....

Helper.....

The Daily Report Form Filled by the Drivers of E. P. Winward & Son, Which Shows the General Detail of a Day's Work of a Truck and Crew.

block form is distributed to the offices of the different mills. When a truck is loaded at a mill the receipt is filled and signed by the driver. The white and yellow copies are left at the mill office, the white copy being retained by the mill and the yellow copy is sent by the mill to the purchaser of the goods shipped the "con verter" or broker.

The other two copies are taken by the driver and the pink slip is delivered to and is retained by the finishing or dyeing company, after signing to show receipt of the shipment, and the blue copy is signed by the representatives of the receiving company and is returned to the office of E. P. Winward & Son, this being the record Mr. Winward has that the work was done.

A freight bill is also made out in quadruplicate, this differing in the headings, which are respectively way bill, memorandum freight bill, duplicate freight bill and freight bill. The finishing companies, for instance, want their bills rendered weekly. As will be noted all the bills have a "pro" number, which is also an identification. The way bill is sent to the finishing or dyeing company as a bill, and in return a check is sent to the haulage contractor. The memorandum freight bill and the duplicate freight bills are both sent to the finishing or dveing company, one of which is filed with the operating records and the other is sent to the customer ("converter"). The freight bill is retained by the company for its own office records. One will understand that there are five interests in every transaction—the mill, the haulage company, the finishing or dyeing company and the "converter," as well as the buyer who shall eventually receive the goods. These two records provide for every need through the use of the copies.

Other Work for Mills.

In addition to this work for "converters" Mr. Winward does a great deal of other work developed through association with the mills. This includes hauling cotton from the steamer piers or from the Watuppa station of the New Haven road, a big receiving shed, where the cotton in bales is received in cars. This station was built a few years ago purposely for handling cotton. The shed is very long and is divided by numerous transverse brick walls to prevent spread of fire, and to segregate the different shipments. The shed has a wide paved roadway at either side, so that there is usually free access to any section at one side or the other, and time is rarely lost in reaching the platform.

But as all of the bales must be hand trucked and carefully stacked, considerable time is required for loading, even with extra men. The fullest time economy can only be realized by having the trucks on headway that will be sufficient for loading one and having a crew of handlers that can do the work very quickly for each vehicle unit. The conditions for unloading at the mills vary, some being such that but little time is lost, while at others the trucks are delayed in many instances. These delays must be charged for or the contractor must face a loss. For these reasons the charges for approximately the same loads and the same hauls must necessarily differ.

Haulage from the mills to the steamer piers of finished goods that are to be shipped by water is a small part of the work and this is intermittent in volume. Considerable haulage of this kind is done from New Bedford, shipment being made from Fall River, which has direct water lines to New York City. Some cotton is hauled overland from Fall River to New Bedford, this work being usually variable. More or less general work is done by Mr. Winward for local concerns, but he specializes mill work and does not take such work as coal haulage, for instance.

Rigging Department Greatly Increased.

The rigging department of the business has been largely developed, and this may also be classified as mill work, though some contracts for others are accepted. This work has greatly increased and Mr. Winward is frequently engaged by concerns all over southern New England. One instance of quick work was the removal of a considerable mill equipment from Lowell, Mass., to Fitchville, Conn. In doing this Mr. Winward took all his trucks and gear to Lowell, reaching there on a Saturday, and the haul to Fitchville was made Sunday, so that there was comparatively little time of the machines away from Fall River, where they were badly needed.

Operation of this department necessitates considerable investment in gear, some of which may be used only for a single work, and often very heavy loads are hauled. This class of contracting may require much more time for preparation for a removal, for instance, than for the actual moving, and possibly much special construction or gear is needed, so that there must of necessity be estimates of prices, or time, labor and the use of gear must be charged.

In this there is not the same character of competition that obtains in trucking, for usually the responsibility of the contractor and the kind of work he can do are influencing factors rather than the price set for the work. In rigging the trucks are especially useful, for they can transport the gear and the workers to any given point in very short time, which is a material saving, and with them in many instances heavy objects can be hauled. The trucks can return with the men and the gear just as quickly, so that there is very large saving as compared with any other vehicles. There are, of course, numerous small rigging contracts which are local, but a considerable part of the contracts are in other towns and cities. These are by no means confined to mills.

May Establish Regular Service.

During the period the United States was at war Mr. Winward did considerable long distance haulage, his trucks making a number of hauls to New York City, and to practically all parts of southern New England. With the cessation of

FREIGHT BILL

E. P. WINWARD & SON

TEL. NO. 3619 — **MOTOR TRUCK FREIGHT SERVICE** — P. O. BOX NO. 430

METACOMET BANK BUILDING

FALL RIVER, MASS.

ACCOUNT OF_____ FROM_____

CONSIGNED BY_____ DATE_____

CONSIGNED TO_____ PRO_____

DESTINATION_____

Pkg Numbers	No Pkgs	Commodity	Weight	Rate per bale	Rate per ton	Rate per load	Charges

TRUCK NO._____ *Received Payment*_____

*Per*_____

The Winward Way Bill, Made in Quadruplicate, Three of Which Go to the Finishing or Dyeing Companies, One of These Being Sent to the "Converter," and the Fourth Is Retained for an Office Record.

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hostilities and a diminution of pressure upon the textile industry there has been for a short period a lessened demand for emergency trucking. Mr. Winward is now considering a transportation service to be operated to regular schedule between New Bedford, Fall River and Providence, with a terminal in each city, with established rates for freightage. If this is done and it now seems probable that it will be, the intention is to base the charges on haulage between terminals, with collection and delivery service from each, so that shippers can send their shipments from one terminal to another, or can have collection and haulage for a larger charge, so that there will be in effect three rates, dependent upon the service. There will be an option, however, that after holding shipments for 24 hours they can be delivered, the object of this being to obviate so far as possible accumulations of shipments at the terminals and the resultant congestion.

How Trucks Are Maintained.

The trucks are now kept at a public garage, but Mr. Winward has bought a garage which will be used exclusively as soon as occupancy can be had. This may not be for several months, however. The trucking organization consists of a superintendent who directs all of the work of the machines, a mechanic who is responsible for adjustments and repairs, who does work whenever it is necessary, and a blacksmith, whose time is divided between the truck and the rigging department.

Each truck driver has a helper and the best men obtainable were employed. The men usually work from 7 o'clock mornings to 6 o'clock at night, and when worked longer are paid overtime. Each driver submits a report at the end of each day, a blank form being shown accompanying this article, which gives the essential facts of the time out of the garage, the time idle, the speedometer readings, the fuel, lubricants and kerosene used or purchased, and the expenses incurred, with any other detail relative to the work or the condition of the truck that may be of importance. In addition the trucks are equipped with Servis Recorders. The mechanic examines the trucks very frequently and care is taken to keep them in the best condition possible, that no time may be lost from service.

The records are very carefully kept to determine cost of operation and revenue received, and provision is made for anticipated expense, such as overhaul and repair, in making estimate for charges for work. Mr. Winward has had long business experience and understands fully the necessity of accounting and the value of figures, so that his records are usually closely kept and include details that are not always considered essential. The main object is to make the trucks pay a profit, and this cannot be done without knowledge of the cost of operation. This careful attention to detail has been a very large factor in the success that Mr. Winward has made, and quite as important as any other is the fact that he has specialized his work and contracted his endeavors in channels that appeared to be most promising.

GLENN B. HILLER IS NELSON TRUCK SALES MANAGER.

Announcement is made by the Nelson Motor Truck Co., Saginaw, Mich., that it has engaged Glenn B. Hiller as general sales manager, and that he has assumed



Glenn B. Hiller, General Sales Manager, Nelson Motor Truck Co., Saginaw, Mich.

direction of the distribution of Jumbo trucks. Mr. Hiller's experience has been extensive and he is widely and favorably known, all of which qualified him for the work.

CAYWOOD AND BROGAN JOIN BLACK & DECKER MANUFACTURING CO.

D. G. Caywood, formerly sales manager for the Brunner Manufacturing Co., Utica, N. Y., has joined the organization



D. G. Caywood, Special Representative, Black & Decker Manufacturing Co., Baltimore, Md.

of the Black & Decker Manufacturing Co., Baltimore, Md., maker of portable electric drills and electric air compressors, and will serve as special representative to carry on the field work incidental to the distribution of Black & Decker specialties. Statement is made that Mr. Caywood was among the first to realize the wide possibilities of electric air compressors and has been actively engaged for 15 years in promoting their use. Graham W. Brogan, who was advertising manager for the Duesenberg Motors Corporation, has also been engaged by the Black & Decker company to direct its publicity. Both Mr. Caywood and Mr. Brogan will have headquarters at the Baltimore factory of the concern.

PENNSYLVANIA LEGISLATORS MAY LIMIT TRUCK WEIGHTS.

Much interest is being manifested by the motor truck trade in the attempt to have the Pennsylvania Legislature limit the size of trucks which may be used on the highways of the state.

Although haulage of trucks with 35-ton loads is against the law, they are constantly passing over the highways in the eastern part of the state. The gross weight of vehicles which may use the highways under the present law is limited to 24,000 pounds. The proposed limitation would insure trucks of a width which would not inconvenience other road users. Engineers declare that although the foundations for the roads have been made increasingly heavy each time they have been repaired or constructed anew, the highways cannot stand up under 30-ton loads.

A provision is proposed to require carrying lights on all vehicles at night, no matter how propelled.

MAY INCREASE MACCAR CAPITAL.

A special meeting of the stockholders of the Maccar Truck Co., Scranton, Pa., has been called to take action on a plan to increase the capital stock of the company from $300,000 to $500,000. P. L. Sylvester is president of the company.

NO CHANGE OF INDIANA TRUCK PRICES.

Announcement is made by the Indiana Truck Corporation, Marion, Ind., that present prices, which are $2150, $2600, $2800 and $4600 respectively for the 1, 1½, 2, 3½ and five-ton models, will remain unchanged up to June 1, 1919.

POWER VEHICLES WANTED IN NORWAY.

Consular R. C. Busser in a report to Washington states that Bergen, Norway, is an excellent market for passenger cars and motor trucks. Merchants and residents there have enjoyed prosperity.

Hoevel Bros., 1317 Chestnut street, St. Louis, has secured the agency for the Indiana truck. C. Walter Hoevel, a member of the firm, has been discharged from the United States Tank Service.

John Baker, Jr., has become general sales manager of the Kelly-Springfield Motor Truck Co.

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The Steering Gear *and* its Importance

ROSS GEARS

WHILE the steering gear is far from being the most expensive unit in the truck, most engineers will agree that it is one of the most important.

Considering the element of safety, there is no other part upon which so much dependence must be placed. Every minute that it is in operation, the *safety* of the truck and its load depends largely upon the *steering gear.*

The steering wheel is the chief point of contact which the driver has with his truck — the mechanism through which he *knows* it most intimately. He will like it or dislike it and his efficiency will be increased or decreased according to the ease with which the truck steers.

That these vital points were carefully and successfully considered in the design of the Ross Steering Gears is demonstrated in the esteem in which they are held by motor truck engineers. Over 115 manufacturers, representing considerably over half the industry, are now using them as standard equipment, among the number being many of the largest and best known makers in the country

The special feature of Ross Gears which distinguishes them from all others is the screw and nut mechanism which transfers the rotation of the steering wheel to the steering arm. The nut is a solid piece, completely enveloping the screw, so that the *entire bearing surfaces of the threads of both screw and nut are utilized.*

These enormous bearing surfaces, together with the quality of Ross material and workmanship, guarantee *easy steering* and *reliable* and *satisfactory service.*

Write for catalog and any special information desired.



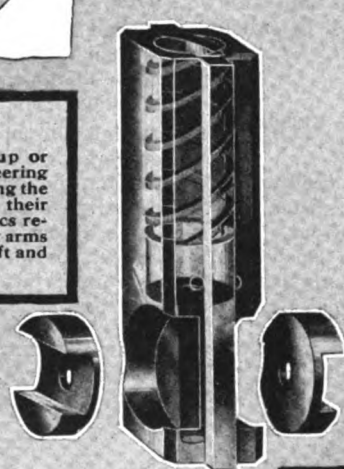
The Screw

This screw is completely enveloped by the nut, thus utilizing all of the bearing surface of every thread in both screw and nut.



The Nut

This nut travels up or down inside the steering gear housing, rotating the cylindrical discs in their recesses. These discs receive the projecting arms of the trunnion shaft and rotate it in turn.



Compare the enormous bearing surfaces thus shown in Ross Steering Gears with other designs in which only three or four teeth are in contact at one time.

The Trunnion Shaft

This shaft moves the steering arm forward or backward when it is rotated, through its projecting arms by the rotation of the cylindrical discs in the nut.

The Steering Gears *that* PREDOMINATE *on* Motor Trucks

ROSS GEAR & TOOL COMPANY, 790 Heath St., Lafayette, Ind.

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A. A. A. ENGAGES IN HIGHWAY HAULAGE WORK.

The American Automobile Association has added to its list of national boards one which will have to do with motor truck operation. President David Jameson has appointed as chairman of the new board Stedman Bent, president of the Automobile Club of Philadelphia, who is thoroughly acquainted with motor truck transportation needs.

The decision to have such a board was made by the executive directors of the American Automobile Association and was brought about by appreciation of the fact that the passenger automobile and the motor truck are economical fellow occupants of the road.

John R. Eustis, who has made a special study of road transportation, is the secretary of the Motor Truck Board, which will have its offices at the New York City A. A. A. headquarters, 501 Fifth avenue, at 42nd street.

The personnel of the Motor Truck Board will include men from all sections of the country. Every A. A. A. club which creates a motor truck committee will be given representation.

With a view of assuring that all interests will have a choice in the conduct of the board, George M. Graham of Buffalo, chairman of the Motor Truck Committee of the National Automobile Chamber of Commerce, has been asked by Chairman Bent to serve on this new board. C. A. Musselman of Philadelphia, George H. Pride of New York, E. C. Dunbar of Detroit, Henry Paulman of Chicago, W. B. Cheek of Omaha, Joseph Decker of Salt Lake City and H. R. Basford of San Francisco are among those who will be called upon to act on the board.

FULTON TRUCK PRICE $1850.

There has been a misunderstanding regarding the price of the Fulton truck, owing to errors in some publications. The price of the Fulton 1½-ton chassis is $1850 f. o. b. Farmingdale, Long Island, N. Y.

White Truck Groups Cited in French Army Orders

How American trucks made good in France is shown in copies of citations for distinguished service by French motor transport units using American made motor trucks. An award of the Croix de Guerre accompanied the citations for the first and second groupements, each operating 500 or more White trucks in the service of Great Headquarters Reserve No. 1. Later this entire reserve, operating 2500 Whites, was recognized by a similar citation.

"For the finest military spirit" and "the best qualities of endurance," read the orders of the day in the tribute for moving 200,000 troops to the front in a few days, many of them a distance of more than 100 miles, at a most critical time.

One groupement operated 200 hours out of 240. Another was on constant duty for 60 hours. It was not uncommon for drivers to remain at their wheels 24 hours at a time. This is the first and only instance in French military history of a truck formation receiving this high honor.

In forwarding copies of the citations the commanding officer made the following comment: "It is natural that the Little White was ahead to merit a reward of this importance." The citations follow:

ARMIES OF THE NORTH AND NORTH-EAST, GENERAL HEADQUARTERS.

Command of the Rear Automobile Service.

Order No. 323 (Groupement No. 1).

Picked unit having participated in all important transports of the automobile service, in the course of which it has distinguished itself by its fine performance.

During the present operations, under the energetic and able command of Capt. Guionin, the entire French and Indo-Chinese personnel showed proof of the finest military spirit and the greatest endurance, providing without interruption the transportation of troops up to the line of battle.



One of the White Truck Groupements of the French Army, with Senegalese Drivers, Included Among Those Cited for Efficiency in Service.

Order No. 349 (Groupement No. 1).

The regulation unit of the Reserve No. 1 under command of Capt. Arristin has rendered conspicuous services in participating successively in the organization and the work of the Regulating Automobile Commissions of Meaux, of Montdidier and of Clermont. Under the most trying circumstances the entire personnel of the unit distinguished itself by its activity and self sacrifice, fulfilling its mission to the extreme limit of its strength, and remaining till the end on the field of battle.

Order No. 374 (Groupement No. 2).

Matchless unit, unequaled in discipline, endurance and enthusiasm, executed brilliantly the transportation of several divisions, pushing as far as the battle line.

Particularly it distinguished itself on March 20, 1918, in bringing at top speed on the very battle ground a division picked up at the railroad terminal; (2) on April 5, in bringing on another point of the battle line two fractions of divisions, although the unit had already been working 36 hours without interruption. (3) Paraded on April 6 in perfect formation, after having been at the wheel 60 hours without relief.

Citation (Automobile Reserve No. 1).

Picked unit which, since the beginning of 1915, participated in all the important transports of troops in Artois, in Champagne, at Verdun, on the Aisne and in Picardie. From March to June, 1918, under the direction of Commandant Stenbock, has given an example of endurance and coolness in providing on the very line of fire, with perfect order, the landing of the infantry of more than 20 divisions.

AIRCRAFT EXPOSITION FOR NEW YORK CITY.

An aircraft exposition will be held in New York, Feb. 27 to March 6, both dates inclusive, and Madison Square Garden has been engaged for this purpose by the Aircraft Manufacturers' Association.

It is planned to make the exhibit truly international in character. There will be exhibits of various American and Allied military airplanes, as well as exhibits of engines and accessories.

The show has been made possible by the revocation of the presidential proclamation forbidding aircraft exhibitions as inimical to the best interests of the country during the war.

WILL OPPOSE UNFAVORABLE TRUCK LEGISLATION.

The Detroit Automobile Club, through its Motor Truck Division, plans to wage a campaign against legislation unfavorable to operators of trucks on the state highways and to foster any fair legislation that may be proposed. More good roads will be encouraged.

The Willard Storage Battery Co. has opened a branch in Boston, Mass., with J. J. Kennealy in charge. The Willard batteries were formerly sold there by the W. H and Webster Jones Co.

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WEST STREET, NORTH RIVER FRONT, NEW YORK CITY—The 1918 picture indicates how the manufacturer within a radius of fifty miles can save time and labor over his methods of ten years ago, by delivering directly to the pier by motor truck without rehandling. In 1908 he shipped to New York by freight or express over the railroads and his goods were rehandled by horse-drawn wagons from the terminal to the ship.

Goods Must Move on time

THE RAPID uninterrupted flow of goods from maker to market is essential.

DELAYS ARE COSTLY. A long-wearing tire contributes to the guarantee against delay.

FISK TRUCK TIRES, solid or pneumatic, are *long-wearing*.

CONSTANTLY INCREASING sales prove the confidence of careful buyers.

MADE in all types for every use.

WHEN in need of truck tires—buy Fisk.

FISK TRUCK TIRES

(When Writing to Advertisers, Please Mention MOTOR TRUCK.)

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BOULDEN ENTERTAINED SELDEN SALES ORGANIZATION.

H. T. Boulden, vice president, in charge of sales and advertising of the Selden Truck Sales Co., Rochester, N. Y., gave a complimentary dinner to the department heads and traveling representatives of the Selden organization, present at a sales conference at the Selden factory, at the Rochester club, in accordance with his annual custom. The affair was thoroughly delightful. It was announced that the Selden organization had enjoyed a most prosperous year and was preparing for even bigger things this year.

Mr. Boulden was toastmaster. The principal speakers were: George C. Gordon, president of the Selden Truck Sales Co.; Robert H. Salmons, vice president of the same organization; C. H. Blackman, general manager "Commercial Vehicle" of New York; R. H. Tolley of the Timken Co., Akron, O.; C. H. Parsons of the Brown-Lipe-Chapin Co., Syracuse, and A. R. Kroh, Chicago, Ill.

Many novel surprises added to the enjoyment. The guests were asked to face the camera for a flashlight. Instead of the usual flash, the room was plunged into darkness and there was a loud explosion. A pale green light flooded the room and a very pretty snowstorm effect of confetti was turned loose. The effect was that of a beautiful winter's evening with the snow lightly falling, and when the orchestra began to play, "Jingle Bells," the guests sang, making the setting complete. What appeared to be palatable buns squeaked when the guests tried to eat them. Throughout the dinner there were similar surprises. Souvenirs of the occasion were received by the guests.

CAMERON TO SELL GOODYEARS IN AUSTRALASIA.

A. G. Cameron, St. Louis, manager of the Goodyear Tire and Rubber Co., has been given charge of the Australasia trade, and he will spend several months each year in the South Seas.

SENATE REJECTION OF WAR TAX ON TRUCKS, ETC.

After the Senate passed the revenue bill, eliminating taxes on trucks and truck parts, Alfred Reaves, general manager of the National Chamber of Commerce sent this letter to members:

"In passing the revenue bill last night members of the Senate were convinced of the unfairness in placing a five per cent. tax on trucks, tractors, trailers and parts therefor, and they were eliminated, leaving proposed taxes of five per cent. on the sale of passenger cars by the manufacturers and five per cent. on the sale of tires, tubes, parts and accessories for passenger cars. The vote was 33 to 28.

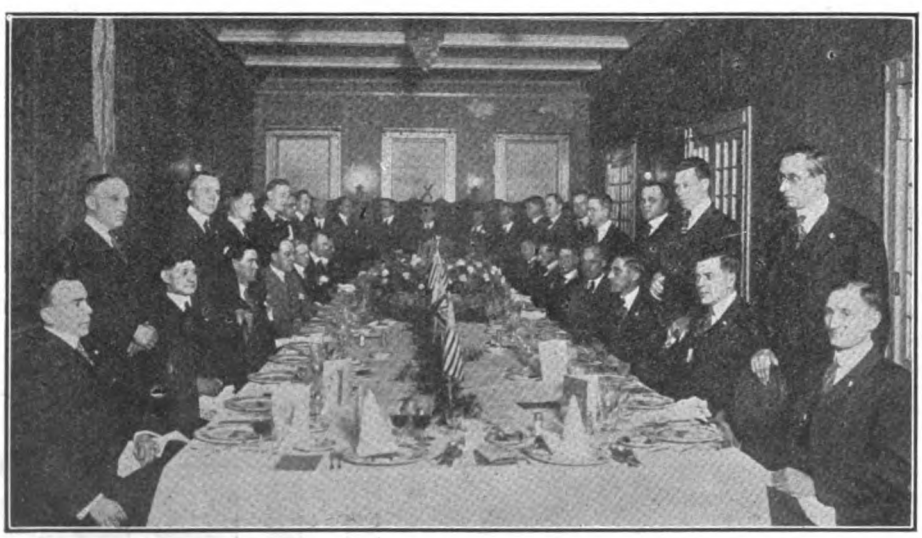
"The bill now goes to the conference committee of the Senate and the House, which is expected to promptly supply a compromise measure which it is hoped will not change the above action.

"It is believed that manufacturers, dealers and users will be able to convince their senators and congressmen of the unfairness of a tax on passenger vehicles, now that the war is over, and particularly the unfairness of a tax on parts and accessories for cars now in use and that one or both of these items will be stricken from the final bill.

A. S. A. E. NOW PUBLISHES THE ENGINEERING INDEX.

The American Society of American Engineers has acquired the Engineering Index, published for 25 years in the Engineering Magazine and its successor, Industrial Management, and universally regarded as the standard index to engineering periodical literature. The first issue of the Index under its new management appears in January number of journal.

As heretofore, the Engineering Index will be regularly issued in three different forms: As a part of the journal of the society, as a separate monthly publication for libraries or individuals desiring to clip the items for indexing purposes, and as an annual volume in which all the items for the year are collected.



Vice President H. T. Boulden of the Selden Truck Sales Co. and His Guests at a Dinner Given by Him to Department Heads and Traveling Representatives at the Rochester Club, Rochester, N. Y.

PACKARD COMPANY DEVELOPING FOREIGN TRADE.

The Packard Motor Car Co. is opening an office in New York City in the interests of its foreign distribution. Fred Cardway, foreign distribution manager, is in charge. He will maintain direct touch with the American agents of many of the firms that represent the Packard company in other lands. The Packard company now has dealerships in 19 foreign countries and in Hawaii, the Philippines and Porto Rico.

Through dealership arrangements effected by Mr. Cardway, South American firms of international reputation recently have become associated with the Packard organization. Mr. Cardway made an extensive tour of South America two years ago.

Regarding trade relations between the United States and the South American republics, Jorge A. Mire, editor of La Nacion of Buenos Aires, has written the following:

"The future trade relations between the United States and the South American republics depend entirely upon the skill with which the North American manufacturers go into the struggle for the trade. Your European competitors have a great advantage, first, in that their investments down there are large, and, second, in that they have been accustomed to doing business with South American houses.

"The Packard Motor Car Co. is one of the representative American concerns that has had the insight to foresee the tremendous development of the automobile business in South America, and it is due in large measure to its careful analysis, not only of the competitive conditions, but also of the psychology of the South Americans, that the Packard already has made its name well known in the southern hemisphere.

"If other manufacturers will follow this lead it will not be long before South American merchants will give as much precedence to American claims as they now accord to those of European houses, and the trade which has been won during the lull occasioned by the great war will continue to be awarded to those American manufacturers who have exercised comparable intelligence and care."

GARAGE MEN AT GREENSBORO CLOSE SHOP SUNDAYS.

Acting on a petition signed by virtually all of the garage men in the city, the city commissioners of Greensboro, N. C., have made it unlawful for any garage, tire or accessory house to be open on Sundays, except from 8 to 10 a. m. and 6 to 8 p. m. to sell gas, repair a broken part or anything that has the appearance of work on or about a motor vehicle. The law carries a fine of $50 for each violation.

The Oldsmobile Co. of Washington, 1202 First avenue, Spokane, is handling the Federal truck.

Shields-Livengood Motor Co., Yakima, Wash., is handling Standard trucks and Dearborn truck attachments.

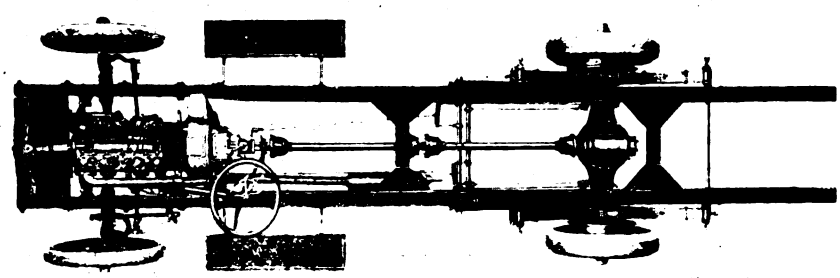
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TOWER
MOTOR TRUCKS

There is just one thing that means success in any business and that is merit in the product. A good article means repeat sales. Tower trucks are built with the quality that makes them repeat. Our catalogue explains why they do.

J. E. Tower, Gen'l Mgr.

2 and 3½ ton sizes that do the most hauling at the lowest ton mile cost



"The Freight Car of the Highways"

TOWER MOTOR TRUCK CO.
BOOTH STREET, GREENVILLE, MICH.

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SALES REPRESENTATIVES AT THE CHICAGO AND NEW YORK TRUCK SHOWS

CHICAGO.

At Private Exhibitions.

Graham Brothers, Evansville, Ind., 2634 Michigan Avenue.
Indiana Truck Corp., Marion, Ind., 2240 Michigan Avenue.
Paige-Detroit Motor Car Co., Detroit, Mich., Paige dealer's show rooms.

Headquarters.

Name of Company	Hotel
Acason Motor Truck Co	Congress
Acme Motor Truck Co	Congress
Bethlehem Motors Corp	Congress
Clyde Cars Co	Congress
Commerce Motor Car Co	Congress
Commercial Car Unit Co	La Salle
Comet Motor Truck Co	Morrison
Day-Elder Motors Corp	Congress
Denby Motor Truck Co	La Salle
Diamond T Motor Truck Co	Congress
Dorris Motor Car Co	Morrison
Dodge Brothers	Blackstone
Federal Motor Truck Co	Congress
Four Wheel Drive Auto Co	Congress
Fulton Motor Truck Co	Auditorium
Graham Brothers	Blackstone
Indiana Truck Corp	Morrison
Kissel Motor Car Co	Congress
Maccar Co	Congress
Master Truck Co	Congress
Menominee Motor Truck Co	Congress
Nelson Motor Truck Co	La Salle
Oshkosh Motor Truck Mfg. Co	Annex
Paige-Detroit Motor Car Co	Congress
Panhard Motors Co	Auditorium
Pierce-Arrow Motor Car Co	Blackstone
Reo Motor Car Co	Congress
Republic Motor Truck Co	Congress
Sanford Motor Truck Co	Sherman
Saxon Motor Car Corp	Congress
Selden Truck Sales Co	Congress
Service Motor Truck Co	La Salle
Transport Truck Co	La Salle
J. C. Wilson Co	Congress
All-American Truck Co	2952 Chicago Ave.
Brockway Motor Truck Co	1714 S. Michigan Ave.

TRUCK CONSTRUCTION UNITS.

Name	Hotel
Clark Equipment Co	La Salle
Covert Gear Co	La Salle
Detroit Steel Products Co	Blackstone
Fuller & Sons Manufacturing Co	La Salle
Gurney Ball Bearing Co	La Salle
Hayes Machinery Corp	Congress
Hyatt Roller Bearing Co	La Salle
Jaxon Steel Products Co	Congress
Martin Rocking Fifth Wheel Co	Congress
New Departure Manufacturing Co	Annex
Pierce Governor Co	Great Northern
Russel Motor Axle Co	Blackstone
Torbensen Axle Co	Blackstone
Sparks-Withington	Congress
Splitdorf Electrical Co	Morrison
Waukesha Motor Co	La Salle

At Own Offices.

Buda Co	Harvey, Ill
Fafnir Bearing Co	1919 S. Michigan Ave.
Standard Roller Bearing Co	2206 Michigan Ave.

Accessories Exhibitors.

Challoner Co	Atlantic

AT THE NEW YORK SHOW.

Truck Exhibitors.

Name	Hotel
All-American Truck Co	Marie Antoinette
Bethlehem Motor Corp	Biltmore
Clyde Cars Co	Commodore
Corbitt Motor Truck Co	Knickerbocker
Denby Motor Truck Co	Belmont
Diamond T Motor Truck Co	Prince George
Federal Motor Truck Co	McAlpin
Fulton Motor Truck Co	Waldorf
Kissel Motor Car Co	Knickerbocker
Maccar Truck Co	Vanderbilt
Master Truck Co	Cumberland
Menominee Motor Truck Co	McAlpin
Paige-Detroit Motor Car Co	Vanderbilt
Republic Motor Truck Co	Knickerbocker
Rowe Motor Manufacturing Co	McAlpin
Sanford Motor Truck Co	McAlpin
Saxon Motor Car Corp	Knickerbocker
Selden Truck Sales Co	Biltmore
J. C. Wilson Co	Prince George

TRUCK REPLACED FIVE HORSE TEAMS ON FARM.

Replacing five teams, a motor truck on Goodyear cord tires is a big aid to Theodore H. Budd on his cranberry farm in New Jersey. This truck is used to pull capacity loads of cranberries from the edge of a marsh over a route marked by treacherous bogs and soggy masses of sand. It makes 25 complete 4½-mile trips daily.

ECONOMY OF PNEUMATIC TRUCK TIRES.

Clay Urie, distributor of the Toledo News-Bee, is a big booster for pneumatic tires. He states that he had a notable reduction in fuel and repair expense since changing from solid to pneumatic tires. Up to the time his truck had traveled 13,650 miles all four Goodyear pneumatic cord tires were in service and appeared capable of much more service. He says that as a result of the pneumatic tires his truck ran on schedule during last winter's heavy snows, which tied up many solid tired trucks.

GRAND RAPIDS AUTOMOTIVE SHOW FEB. 17-22.

The annual show of the Automobile Business Association at Grand Rapids, Mich., will take place Feb. 17-22. The association had originally decided not to have a show this year, but changed its action as a result of the signing of the armistice. Every space has already been taken in the car, truck and equipment divisions.

SOLDIERS WANT WELL PAID WORK, SAYS GOODYEAR.

Discharged soldiers are looking for jobs that pay good money and not for soft positions, according to the many applications for employment made at the big plant of the Goodyear Tire and Rubber Co., Akron, O. The same applies to the sailors.

The Goodyear experience in "hiring in" the men recently out of the service shows that the boys are not fussy about what kind of work they take up and that they are not afraid to buckle down to a hard job. Most of them want the kind of work where they can perform the best service and earn the most money.

The great number of applications pouring in indicate that the boys want to get back to work immediately.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 2. PAWTUCKET, R. I. FEBRUARY, 1919.

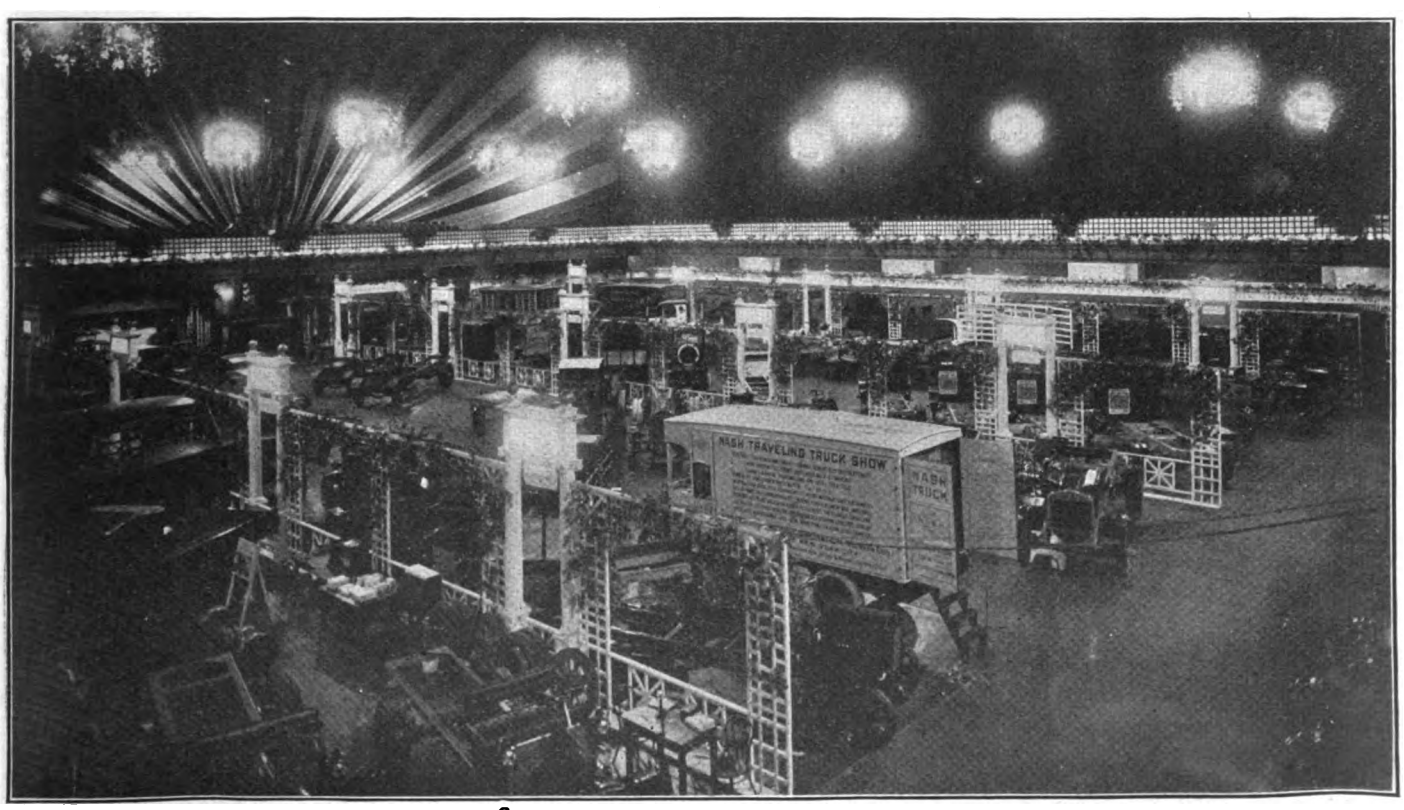
NEW YORK TRUCK DEALERS' SHOW A BUSINESS SUCCESS

Satisfactory from Point of Sales, But of Far Greater Value Is the Promotion of Power Vehicle Transportation—Few New Models, But Many Highly Perfected Machines Were Shown —Specialized Bodies a Feature—First Exhibition of Tractors

NEW YORK CITY'S first power truck show in six years, and the first ever held by the metropolitan dealers themselves, scored a distinct triumph. Interest in motor trucks and the possibilities of economical highway transportation were exemplified in a marked manner by the vast crowds that visited Madison Square Garden and the 69th Regiment Armory while the truck show was in progress. It was the second week of Gotham's 19th automobile show, the first week having been devoted to passenger cars.

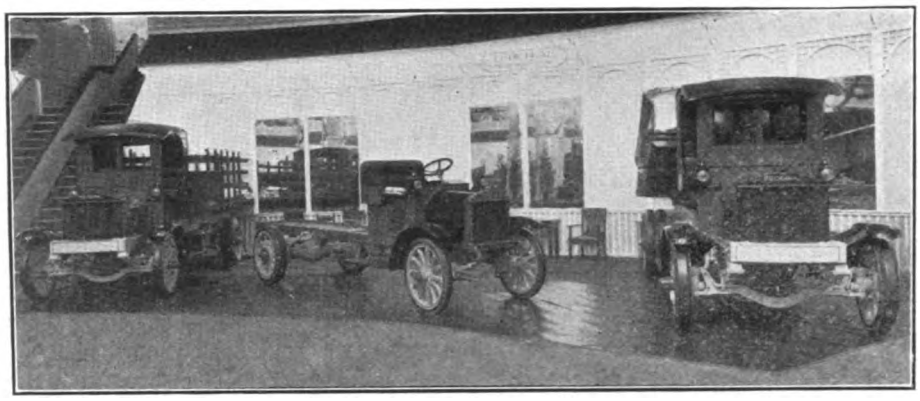
The truck show week was an experiment, but its results have been so satisfactory to all of the exhibitors that it will hereafter be recognized as a necessary part of a complete American automobile exhibition.

The officers of the New York Automo-



Looking Across the Main Floor of the 69th Regiment Armory from the Balcony During the Truck Exhibition That Followed the Passenger Car Show.

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The Space at Madison Square Garden, Main Floor, Where a Full Series of Federal Trucks Were Shown.

bile Dealers' Association, which had charge of this year's show, were so encouraged by the results of the two weeks that they immediately set to work planning a more vigorous campaign of closer cooperation between the metropolitan dealers than has ever existed before.

The motor truck exhibition had the effect of directing public attention forcibly to the need of improved highways.

There were 29 new truck models, and 13 new companies exhibited for the first time. There were 55 makes of trucks, with 144 models on exhibition. Eight of the exhibits had not been shown in Chicago.

Not Many Mechanical Changes.

The war had prevented anything of great importance in the way of engineering improvements, but there were quite a few minor chassis changes seen that created more or less interest. At previous truck shows, with the manufacturers in control, many stripped chassis were shown, to display the mechanical constructions. The dealers, preferring displays that would be more suitable to their merchandising campaigns, had on exhibition mainly fully equipped trucks, with welcome refinements in body design that tended to make the trucks more interesting to those having specific requirements in mind.

Many of the trucks had cabs and other conveniences for the driver, with luxuriant cushions and springs for the seats. There is evident recognition of the fact that the more comfortable a driver is the better will be his work.

A decided trend toward the use of pneumatic tires for the lighter capacity vehicles was apparent.

The show was an object lesson of the present success and future possibilities of highway transportation, whether looked at from the efficient city delivery system, from the rural motor express, or the carrying of freight for quick delivery over the roads for long distances.

There was noticed a tendency to build bodies designed for specific or special work.

While there was not a riot of paint and trimmings, the exhibition was not without color. Many exhibitors had dolled up their vehicles to relieve the sombre air which usually is evident at a truck show. Every form of truck chassis and body was displayed to its best advantage and the visitors were very intent upon their examinations of the mechanical and body features of the vehicles.

Business Men Sought Trucks.

Stability, economy and service seemed to be uppermost in the minds of those who viewed the aggregation of machines. Business men who have hauling to do realize that they can no longer keep up with the procession without efficient motor vehicles, and it is now merely a matter of finding the one which best suits their needs.

Prospective buyers and salesmen seemed to get along very nicely on all of the essentials until they reached the point of delivery, and on this there usually was a hitch. The demand is greater than the supply and the buyers who insisted upon immediate delivery often found that there wasn't any such thing.

Truck buyers, like those seeking passenger cars, have been deferring decision since the war closed, hoping for reduction in prices and a flood of trucks upon the market, but prices keep up stubbornly and production daily falls further and further behind demand.

The eastern buyer is decidedly handicapped by the fact that nearly all of the truck factories are in the Middle West, and it is the Middle West that is buying the trucks as fast as they can be produced. The Chicago truck show, which opened first this year, absorbed a large part of the immediate output of the factories, and eastern dealers are having difficulty in obtaining quick delivery.

The exhibits included about a dozen newcomers into the truck industry. Among these were a ton Oldsmobile delivery wagon built in the same factory as the passenger car of the same size; the Shaw two-ton truck, built in Chicago; the Traffic truck, produced in St. Louis; the West, a new electric truck manufactured in New York City; the new Paige truck, turned out by the builders of the Paige-Detroit car at Detroit; a new one-ton Columbia and a five-ton Acme. Builders of the Rainier and Stewart trucks also displayed two new models added this season. The new three-ton Rowe, one of the modern higher speed types; the new Ward Special and the La France were also shown.

The newer makes are assembled types, and some of them use the Continental truck motor, including the Columbia, Acme, Shaw and others. The three-ton Rowe, which has maximum speed of 30 miles per hour, has a Herschell-Spillman eight-cylinder engine, with a rear axle worm driven. Grease lubrication has been supplanted by oil on many of the trucks.

Besides the new models the following at the New York show were not at the Chicago exhibition: Larrabee-Deyo, Parker, Wichita, Atlas, Corbitt, Giant, Hall, Kelly-Springfield, Maccar, Packard, Riker, Schacht, Sullivan and Traffic.

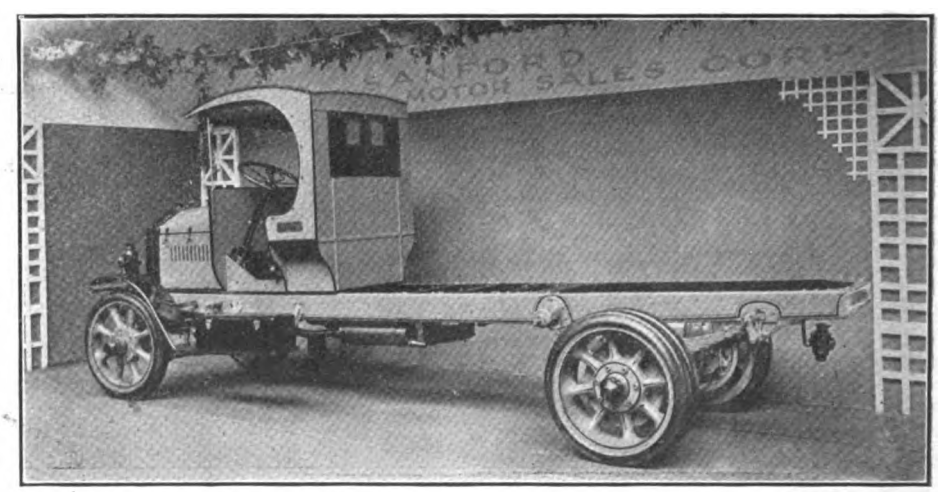
Five makes of conversion units for passenger car chassis were shown and three makes of trailers. Farm tractors were exhibited for the first time in the history of New York motor shows. The Maxim, Fordson, National and Emerson-Brantingham tractors were shown.

Several of the accessory and parts concerns which exhibited at the passenger car show retained their booths, but changed the character of their displays to conform more to the commercial car atmosphere.

Maxwell Transcontinental Record Make.

The Maxwell one-ton light delivery wagons at the show accentuated a phase of long distance motor hauling in the exhibit of the original truck which made the transcontinental record for a fully equipped freight vehicle of 17½ days from San Francisco to New York last summer. The wheels and lower part of the body were still liberally besmeared with the original western dust and dirt.

The Dodge Bros. half-ton truck was another popular type of the lighter class.



One of the Exhibition Trucks of the Sanford Motor Truck Co., Seen on the Main Floor, 69th Regiment Armory.

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Where the Columbia Trucks Were Shown at Madison Square Garden, the Exhibit Being Both Chassis and Complete Assemblies.

Three different bodies were shown, one being especially designed for use by large department stores.

The Oldsmobile one-ton was a newcomer, having been brought out this season. It was shown with a neat express body. The Reo one-ton models were shown with several body types, including an ambulance, a fire department wagon equipped with ladders and other apparatus, an express delivery and two omnibuses, one with a closed body having wide windows on the side.

Among the heavier trucks the Packard showed a new six-ton body, designed especially for the use of contractors. The steel convertible body had a capacity of four cubic yards. Steel towing hooks in front and a trailer drawbar were added conveniences. The cab was enclosed, the driver's seat accommodating three men. An electric starter may be installed as special equipment. Other Packard models were a well finished chassis of a 5-5½-ton truck, a three-ton truck with a stake side body and one of the 2-2½-ton models.

Trucks with Patriotic Colors.

The two models of the United States trucks, 2½ and five tons respectively, had their radiators painted in the patriotic red, white and blue colors to add distinction to the name. The Giant trucks, whose name suggests power and efficiency, were shown in several models, from two to 3½ tons, including a fine chassis of the latter size. The valuable feature claimed for the Giants is that by a patented device they are enabled to operate with efficiency on the low-grade fuels, including not only the low grade gasoline, but with kerosene, and many of them in successful use are operated entirely by kerosene.

The five-ton Corbitt has an engine 5¼ inches bore and 5¾ inches stroke, and the price has been increased $500. The Shaw has a Continental 4⅛ by 5¼ inches engine, Brown-Lipe clutch and gearset, Timken axles and 36 by four inch and 36 by seven inch tires. The propeller shaft has three universal joints. The new five-ton Acme chassis has a worm drive and wheelbase of 180 inches. It has a 55 horsepower Continental engine, 4¾ inches bore and six inches stroke. The La France company had one model on exhibition, a two-ton chassis fitted with cab. The Columbia truck displayed was a new one-ton internal gear driven model, with a Russel axle and a Continental unit power plant. The Ward Special attracted considerable attention on account of the novel step construction, the step in the front of the truck being suspended under the front spring horns and half the dash hinging back to allow ingress and egress.

Another newcomer was the six-ton Dayton-Elder truck of which a chassis was shown and there was also displayed a chassis of the same type equipped with a contractor's dump body and power hoist. The Day-Elder trucks are also made in one, two and three-ton models.

Only One Six-Cylinder Truck.

There was one six-cylinder truck in the show, the Parker. It was fitted with a newly designed contractor's body, of which the distinctive feature was its two-cylinder hydraulic hoist. The body was 12 feet in length and six feet wide and the three-foot tailgate when lowered extended the body to 15 feet. It was a five-ton truck, with extra large springs.

The Overland trucks at the show were the two familiar models, one known as the delivery wagon express type, with 800 pounds capacity, and the other the 1200-pound delivery wagons. The bodies were of pressed steel, with flareboards, equipped with curtains to protect the driver and the contents in stormy weather, and with electric starter, electric lights, electric horns and speedometers.

Four-Cylinder Engines Almost Universal.

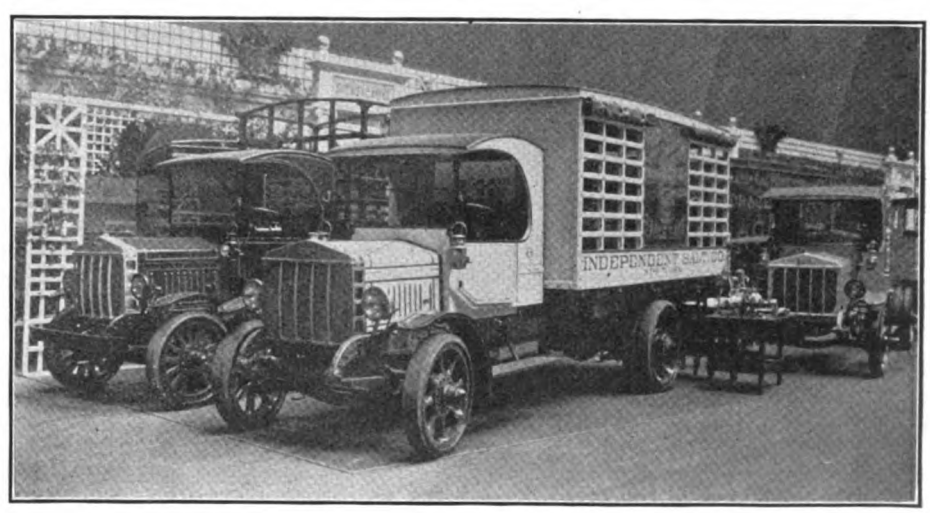
Four cylinders is the universal truck motor power. There is a tendency to make the engines somewhat larger than formerly in relation to the load capacity. More models than formerly carry their gear boxes amidships and the gearsets of the four-speed types are gaining in number on the larger vehicles. Less than nine per cent. of the new models are driven by side chains, the worm drive being well in advance, thus reversing their ratios with reference to prevailing practise as compared with the constructions of several years ago. There is also a considerable increase in the number of chassis models equipped with internal gear, while the bevel and the double reduction gear types are fewer in number.

In load capacity next to the small light delivery wagons the 3½-ton truck appears the most popular. The demand of the United States and the allied governments influenced the large increase in the 3½-ton trucks. There are seven times as many manufacturers of this type as was in the case of the year before the war. The popularity of the 1½-ton type is also evidenced in the fact that that size is now being produced in 24 models, which were not in the market last year.

Grant Pneumatic Truck Tire.

One of the new things in the show was a pneumatic tire, 44 by 10 inches, fitted to a Republic 3½-ton truck. It is claimed to be the largest automobile tire ever made, and is the latest production of the Firestone Rubber Co. Two of these huge tires, which with the tubes and rim weigh approximately 250 pounds apiece, were attached to the rear wheels of the truck, while on the front were 38 by seven inch pneumatics. The cost of the larger tire is $350 for the shoe and $45 for the tube, or $395 for the complete tire, while the smaller size costs $155 for the shoe and $24 for the tube.

These enormous pneumatic tires indicated the trend which has been developing toward the use of pneumatic tires for heavy trucks. The advantages claimed are greater speed and less vibration, but with the use of better springs the vibration and possible deterioration of the



The Only Six-Cylinder Trucks at the Show, the Stand of the Sterling Motor Truck Co., at the 69th Regiment Armory.

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chassis have been materially reduced on trucks using solid rubber tires.

Tendency to Large Capacity Trucks.

A feature noted was the tendency of an increasing number of manufacturers to make larger trucks and the six-ton truck is not at all uncommon. The demand for these larger sizes is growing constantly. There is agitation by some motor organization that certain definite standards should be fixed regulating the maximum sizes and weights of trucks for highway use.

The makers recognize the necessity of establishing some limitations on trucks to conserve the present roads until time permits their reconstruction to meet the growing needs of economical transportation.

The New York state law, it is pointed out, limits the individual truck load to 22,500 pounds, including the weight of the vehicle. That means that legally a 5½-ton truck is the maximum size which can travel on the New York highways, as when fully loaded the truck will carry 5½ tons, making the total weight 22,000 pounds. A six-ton truck would mean a total load on the highway of 24,000 pounds.

New Jersey allows weight of 25,000 pounds. The law has not been strictly enforced, but some form of uniform law establishing maximum limits is urgently needed as a benefit both to the roads and to proper highway transportation.

Many Events Attracted Visitors.

Among those who attended the show to study the development of the motor truck industry were many delegates to the convention of the American Road Builders' Association, to be held at the Hotel McAlpin, Feb. 25-28.

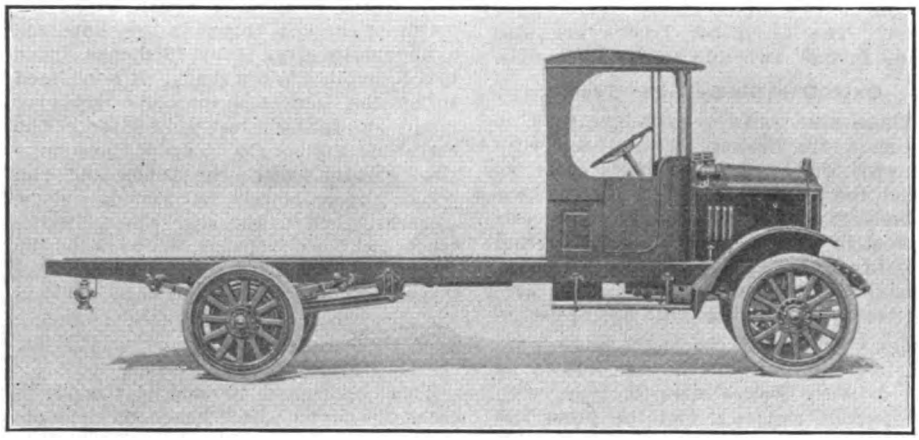
Thursday at the show was Motor Truck Club and Association Day, and a large delegation was present from the Motor Truck Club of New Jersey and the Motor Truck Association of America. In the evening the latter organization had a dinner at the Automobile Club of America.

In connection with the truck show the members of the Automotive Electric Association, composed of manufacturers of electric equipment for automobiles, held its semi-annual winter meeting at the Hotel Astor. The metropolitan section of the Society of Automotive Engineers held a dinner Monday night at the Automobile Club of America. C. T. Morris, who was associated in the design of the army transport Class B trucks, and Capt. Lord of the Motor Transport Club, were among the speakers.

More than 100 representatives of motor truck manufacturing companies who came to New York for the show met in the rooms of the National Automobile Chamber of Commerce and discussed different phases of the industry. Col. Fred Glover of the Quartermaster Corps, U. S. A., said that all surplus trucks in army use would first be offered to other government departments, and only in case that they could not all be used would the excess be offered at public sale.

Fourth Assistant Postmaster General James I. Blakslee discussed the reason for his request for an appropriation of $100,000,000 as an emergency measure to provide employment and start industrial activity during the period of war readjustment. With the appropriation he plans improvement of the highways and the operation of motor trucks in a wide extension of the rural parcel post service.

Chicago Truck Show a Big Success



One of the New Machines Displayed for the First Time at Chicago—The 3½-Ton Tower Truck.

WITH several companies exhibiting their vehicles for the first time at a show, the Chicago motor truck show, held under the auspices of the Chicago Automobile Trade Association, Feb. 3-6, at the Chicago Coliseum and Annex, was a complete success. While radical changes in engineering were lacking, many of the chassis exhibited showed improvements.

There were 62 complete motor trucks and 79 motor truck chassis shown by 60 concerns. In addition, there was a fire truck, a chemical truck, a hose cart, 11 trailers, three tractors with trailers, a hearse and a truck body exhibit. Motor trucks were shown by firms which hitherto had devoted their production entirely to passenger cars, but which now find themselves with factory buildings and mechanical equipment left over from war work which are being devoted in part at least to the production of trucks.

It was apparent that the standard United States truck has not as yet made serious inroads on the designs of commercial vehicles generally. Engines show slightly more horsepower in many of the trucks over those of last year, the bore having been increased on the average something like ¼ inch. Some makes of trucks have engines different from those they had last year. The worm internal gear and bevel gear drives are replacing side chains. Many manufacturers are using oil cups instead of the grease cups.

Numerous bodies were shown which increase truck efficiency. A Garford six-tonner had a three-way dump coal body, made of steel, which could discharge its entire load through a chute at the rear by being elevated by a hoist at the front.

The increased use of closed cabs to protect the driver was very noticeable. There were numerous designs in the cabs. Some were of the convertible type, others requiring some take apart operations to change them from winter to summer use. Some of the cabs give protection to the drivers by substantial curtains, while others are of the built up type with glass panels in wood sashes.

Winslow Steam Truck a Novelty.

Perhaps the newest vehicle exhibited was the Winslow steam truck, which was the only steam truck at the show. The five-ton truck is the only model the company has built to date, but smaller units are to be made. The engine, which is a four-cylinder, with the cylinders cast in pairs and set in a V of 90 degrees, is placed under the floor of the cab and drives direct without any clutch through a tubular propeller shaft with universal joints to the worm driven rear axle. There is an emergency gear reduction, 3.5 to 1, making the total gear reduction to the rear wheels 41 to 1. The final drive is through radius rods and the torque is taken by the springs. The boiler is fired by kerosene, which is also carried in a tank under the driver's seat. In the place of the usual radiator is a large condenser. One of the main advantages claimed for the truck is the low cost of fuel.

Two other makes, the Signal and the Clydesdale, are fitted with modified Class B engines as built by the Continental Motor Corporation. However, both of these installations have single instead of double ignition, making use of magnetos. This necessitates the use of a new detachable cylinder head with only one set of spark plugs. The electric starter and lighting are missing.

The two new models of Available trucks have a new idea for brake equalizing, a new design of front axle mounting and a two-step running board. The brake equalizing is by two flat equalizer rods, one above the other, which run in slotted members fastened to the under side of the truck frame near the midpoint of the chassis. These rods extend

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crosswise of the frame and move forward in a longitudinal direction toward the front end of the truck as the brakes are set and backward as they are released.

Heat Fuel Four Times.

The All-American trucks heat their fuel four times before it enters the cylinders. These four heatings are made possible by mounting the gasoline tank directly above the engine under the hood, by a hot-air jacket around the air intake pipe leading to the carburetor, by a hot air jacket around the air intake pipe leading to the carburetor by passing the gas through the cylinder block after it has left the carburetor and by then making it impinge on the hot sides of the intake manifold, which is cast integrally with the exhaust manifold.

Fourteen of the makes of trucks exhibited had some form of oil lubrication. There was also evident a tendency to fit enclosed cabs for the protection of the driver. In most cases these are furnished as standard equipment and included in the set price of the chassis without the body. The metal body is the more popular. Many truck exhibitors showed special bodies for work for which standard types are not best adapted and much ingenuity was evidenced in these designs.

The new concerns having truck exhibits for the first time included the following: Winslow Motor and Engineering Co., Chicago, maker of the only steam truck at the show; Mutual Truck Co., Sullivan, Ind.; Paige-Detroit Motor Car Co., Detroit; All-American Truck Co., Chicago; Dearborn Truck Co., Chicago; Hebb Motors Co., Lincoln, Neb.; Tower Motor Truck Co., Greenville, Mich.; Transport Truck Co., Mt. Pleasant, Mich.; Nelson Motor Truck Co., Saginaw, Mich., and the Panhard Motors, Grandhaven, Mich. New models of Acme, Master, Commerce, Signal, Dorris, Stewart, Available and Fulton trucks were shown.

The display of Tower trucks included both two and 3½-ton chassis, these two types attracting much attention. The machines are constructed from proven units produced by specialists and are well designed, the engineering developing what impressed visitors as unusually well built chassis. The company has greatly increased its facilities for manufacturing and will operate to maximum capacity to meet the contracts of its distributors.

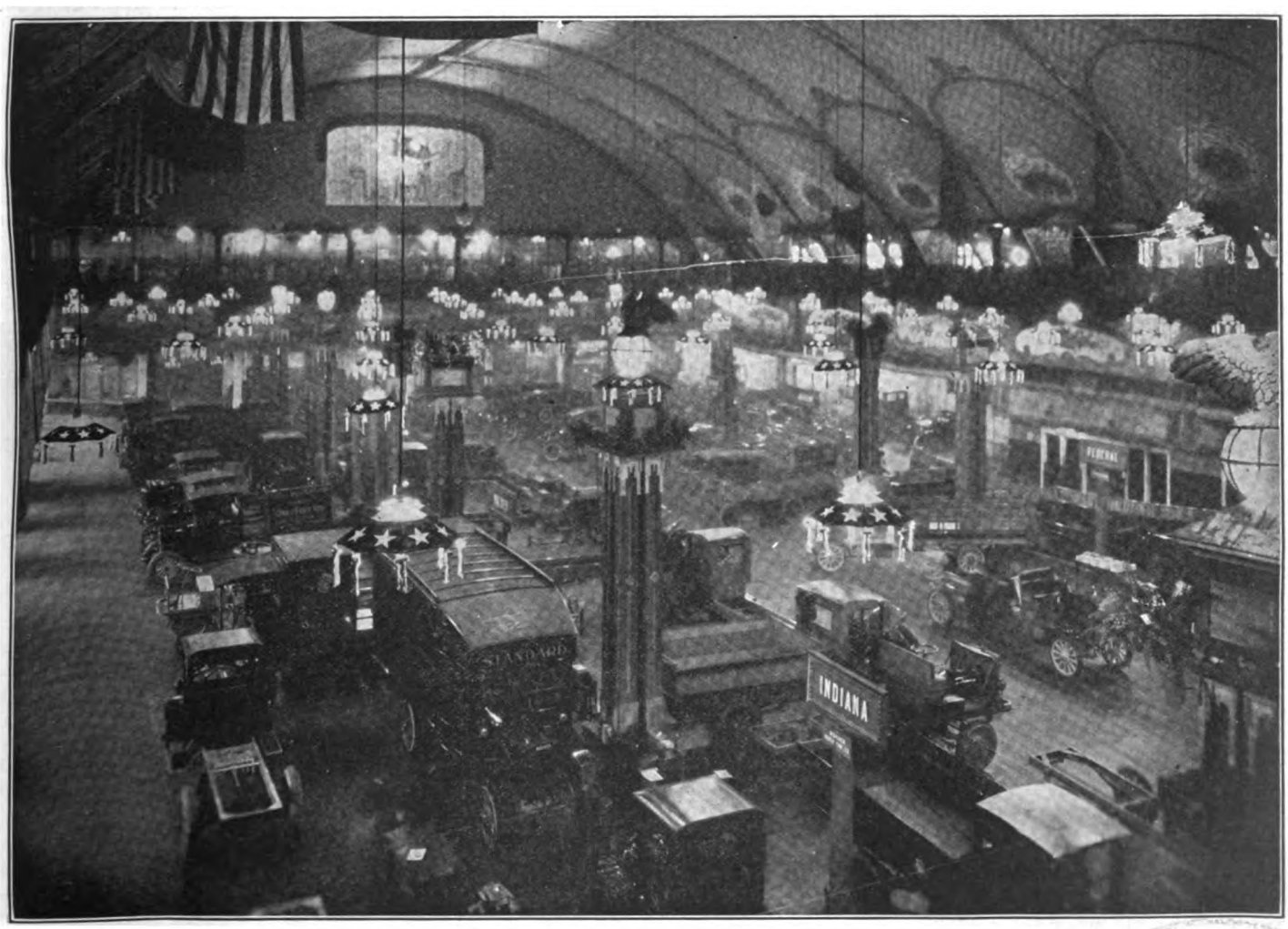
The company will be represented in Chicago by the Tower Motor Truck Co. of Illinois, Inc., of which W. J. Mead, formerly general manager of the Olds Motor Works, Lansing, Mich., and for years associated with the General Motors Corporation, is the head. The company has as its territory Illinois, southern Wisconsin, eastern Iowa, northern Indiana and southwestern Michigan. During the show a considerable number of agency contracts were made.

Some New Construction Units.

There were two makes of truck axles, the Clark internal gear driven type and the Badger external gear driven type. The West Steel Casting Co., Cleveland, O., displayed seven different sizes of its spoke type metal wheels, one being a new design for mounting 44 by 10 inch pneumatic tires.

The Waukesha Motor Co., Waukesha, Wis., showed four makes of engines. One of these was a Class B engine and is used in the army trucks of that classification. The company is planning to bring out an entirely new line of high torque esgines especially designed for motor truck service.

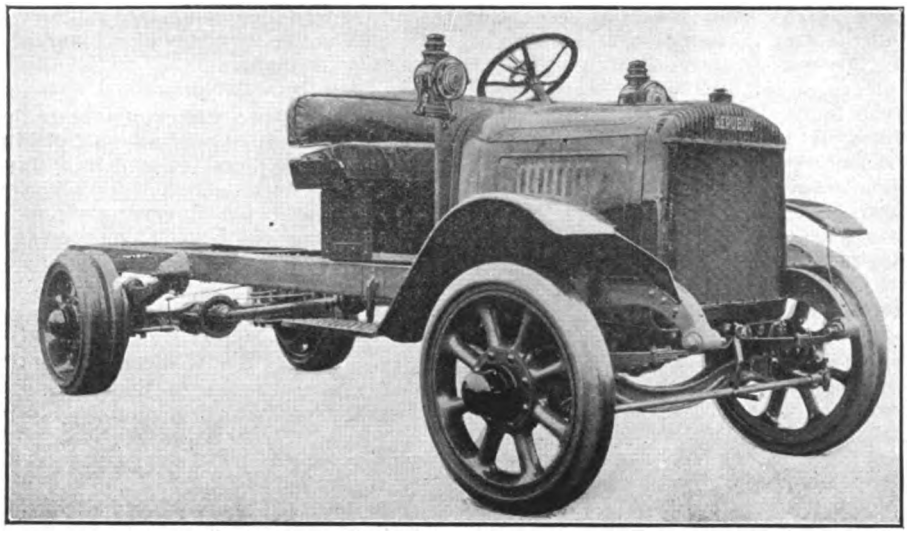
The Lee Loader and Body Co., Chicago, showed a new series of three trailers. There were two models of Troy trailers, one a two-ton reversible chassis, the other a 3½-tonner with a steel body. Three models of trailers were displayed by the Highway Trailer Co., Edgerton, Wis. Two models of the Hesse, made by the William G. Hesse & Son Manufacturing Co., Leavenworth, Kan., were also shown.



A Part of the Main Floor of the Coliseum, as Seen from a Corner of the Balcony, During the Chicago Truck Show—This Followed the Exhibition of Passenger Cars.

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TWO NEW REPUBLIC TRUCK MODELS



Model 20, Known as the "Yellow Chassis Dreadnaught," Having a Rated Load Capacity of 3½ Tons and Built for Heavy Duty.

DECIDED progression is evidenced in the two new models of Republic trucks recently designed and now being produced commercially by the Republic Motor Truck Co., Alma, Mich., which are regarded as being the most thoroughly perfect units yet built by this concern. Statement is made that they represent the advance in power truck design made during the war, and that the qualities will be evident upon even casual inspection. The model 19 is also known as the "Yellow Chassis Invincible," and has a rated load capacity of 2½ tons. It is intended that this shall meet the requirements of large numbers of business men who have need of units of moderate capacity. The model 20, also known as the "Yellow Chassis Dreadnaught," has a rated load capacity of 3½ tons and is claimed to be a "moderately light weight truck" that is constructed for heavy duty.

The designs have been developed with much care and statement is made that the machines have been very carefully balanced with reference to proportions of units and parts, so that there is ample strength and yet no excess weight. The standard wheelbase of model 19 is 144 inches and of model 20 165 inches, with an option for the latter of 185 inches at additional cost.

Continental "Red Seal" Engines.

The engines for both chassis are the Continental Red Seal, which have been specially developed for power, economy and reliability. The engine for the smaller chassis is a four-cylinder, water cooled unit, with cylinder bore of 4⅛ inches and stroke of 5¼ inches, which is rated by the S. A. E. formula at 28.90 horsepower, and that for the larger chassis is a similar type with cylinder bore of 4½ inches and stroke of 5½ inches, rated by the same formula at 32.40 horsepower. The cylinders are L head type and are cast in pairs. The crank case is cast in two sections, the upper half carrying the main bearings and the lower section is the base of the crank chamber and the oil reservoir, with extensions that house the timing gearset and the flywheel. The crankshaft is a special alloy steel drop forging, having three journals, that is heat treated and ground to dimensions.

The engines are lubricated by internally contained circulating systems that are known as the splash pressure type. The lubricant is drawn from a screened well in the reservoir by a gear pump and is forced through two main supply pipes, the one in the upper section of the crank case and the other in the lower half, the former supplying the three main bearings and the timing gearset, and the oil distributed by the splash of the connecting rods in the oil troughs in the crank chamber lubricating the cylinder and piston walls, the wristpins, camshaft bearings, the cams and valve tappets.

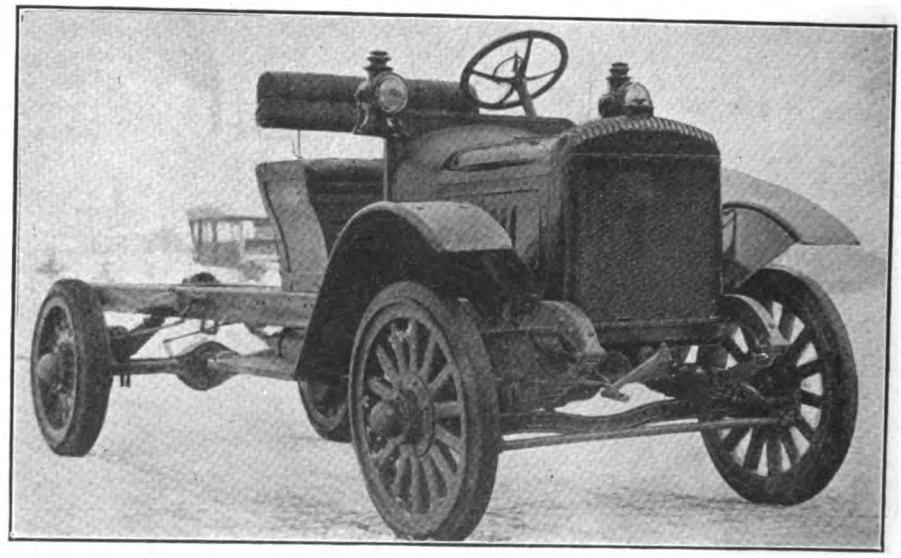
Other Details of the Engines.

The engines are cooled by circulations of water forced through the cylinder jackets by centrifugal pumps and large radiators of the exclusive Republic armored type. The radiators are large, that of the smaller chassis having 450 square inches of frontal surface, and that of the larger 600 square inches. The cores are built to have strength that will endure vibration and road shock stresses, and are removable in the event of damage. The engines are governed by governors driven by helical gears from the camshaft and these can be sealed so they cannot be changed by the drivers without the knowledge of the owners or others directing the uses of the machines. The ignition is by high-tension magnetos, with variable spark operated by hand levers on the steering wheels, and the fuel is supplied through float feed carburetors of improved types that are maintained to be extremely efficient.

The clutches, which are a multiple dry disc type, that is said to be very easy of engagement, and the transmission gearsets, are assembled with the engines, and the unit power plants are suspended at three points, this obviating all stresses from chassis distortion. The gearsets are selective sliding gear types, having four forward speed ratios and reverse, this construction having been proven to afford greater utility and to insure certainty of operation where traction is poor or the grades extremely steep. The lowest forward ratio is especially useful for starting heavy loads and the highest ratio affords an economical direct drive for use in favorable conditions.

The Power Transmission System.

The power transmission system consists of a two-section main shaft, the sections being tapered at either end, with three universal joints, there being a supporting self-aligning bearing mounted on a frame cross member. As in all Republic trucks the rear axles are Torbensen internal gear units, the load being carried by an I section member on which is mounted the completely housed jackshaft, the pinions on the ends of the driving shafts meshing with the internal ring gears secured to the rear wheels, which are enclosed and require lubrication at infrequent intervals. These axles are claimed to apply 92 per cent. of the engine power direct to the rear wheels



Model 19, Known as the "Yellow Chassis Invincible," Which Has a Rated Load Capacity of 2½ Tons and Built for General Utility.

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and to afford very high efficiency where the work is heavy.

The frames are heavy pressed steel channel section, with strong cross members, well reinforced and gusseted, and these are mounted on semi-elliptic springs. No radius rods are used, the drive being through the rear springs, which also absorb the torque and braking stresses. The steering gears are heavy and are located at the left sides, and the control is by the usual foot pedals for the clutches and the service brakes. The gear shifting and the emergency brake levers are at the centers of the footboards and the ignition and fuel supply levers are on the hand wheels.

The service brake is an external contracting type of new design that is stated to be very efficient, and the emergency brake is an internal expanding type. Both brakes operate on the rear wheels. Another feature is a foot accelerator with a foot plate. Much care has been taken to obtain effective lubrication and oil cups have been installed and grease cups discarded wherever practicable. Oilless bearings are used for the brake shafts, this insuring against possible neglect. Endurance has been insured by the use of highest grade materials throughout. Even the tool kit has been improved by the addition of front and rear axle wrenches that fit the spring clip nuts.

The chassis are sold with the usual equipment and may be fitted with either solid, pneumatic or cord tires, as the buyer desires.

JAXON PLANT REBUILT AND IN OPERATION.

A large unit of the Jaxon Steel Products Co., in Jackson, Mich., which was burned about a year ago, has been rebuilt and is again in operation. The Jaxon company became a subsidiary of General Motors Jan. 1. Up to that time it was a part of the United Motors Corporation, which has been merged with the General Motors Corporation. During the war considerable government work was done at the Jaxon plant, principally the manufacture of rims and heavy artillery tires. More than 600 workers were on the payroll, but only a few women, as they could not handle the heavy materials and parts.

LAURAINE MAGNETO MOVING TO LONG ISLAND CITY.

The Lauraine Magneto Co., now manufacturing by contract at Menominee, Mich., will soon move its headquarters to Long Island City, N. Y., where it has taken 50,000 feet of factory space. Michael Feldine, the president, predicts that the company will make 50,000 magnetos this year.

MEXICO EXTENDS EXEMPTION.

Consul General Chamberlain at Mexico City has announced that a presidential decree extends indefinitely the exemption from Mexican import duties for motor trucks and all other vehicles.

REFRIGERATOR TRUCKS FOR MEAT HANDLING.

An equipment that is stated to be the first of the kind ever constructed in America, and which was found in use to be in every way practical, is a refrigerator body for a six-ton Packard chassis, owned by the Sullivan Packing Co., Detroit. The company's plant had for years made distribution to its branches by railroad, there being direct service with all of them, but when the railroad congestion became acute and 60 or more hours was the time for moving a car from Detroit to Toledo, O., the company decided it would experiment with highway transportation.

A Packard six-ton chassis was bought and on this was installed a body very much like those of standard refrigerator cars. The walls and the heavy side doors were made of aluminum, wood and cork, which was especially efficient for insulating the interior, with tanks for ice and brine that were filled from outside.

The truck was found to be in every way serviceable and with it the 60-mile haul between the Detroit plant and Toledo was covered in approximately six hours, this reducing the shrinkage to a minimum that could not be equalled with railroad cars, and besides making faster time there was the door to door delivery and the reduction of handling. Not only this, using a trailer the truck could move 18,000 pounds to the load with no appreciable difference in time. Then to make the proposition even more profitable general freight was hauled back to Detroit, so that every mile driven was productive.

The truck has been used for several months and the results are so satisfactory that there is probability that similar trucks will be used to make deliveries and haulage between Detroit and Flint, Lansing, Pontiac and other cities within a 100-mile radius. In fact, within the zone indicated there is every reason to believe that railroad shipments will be abandoned.

TWO HARTFORD PARTS COMPANIES MERGED.

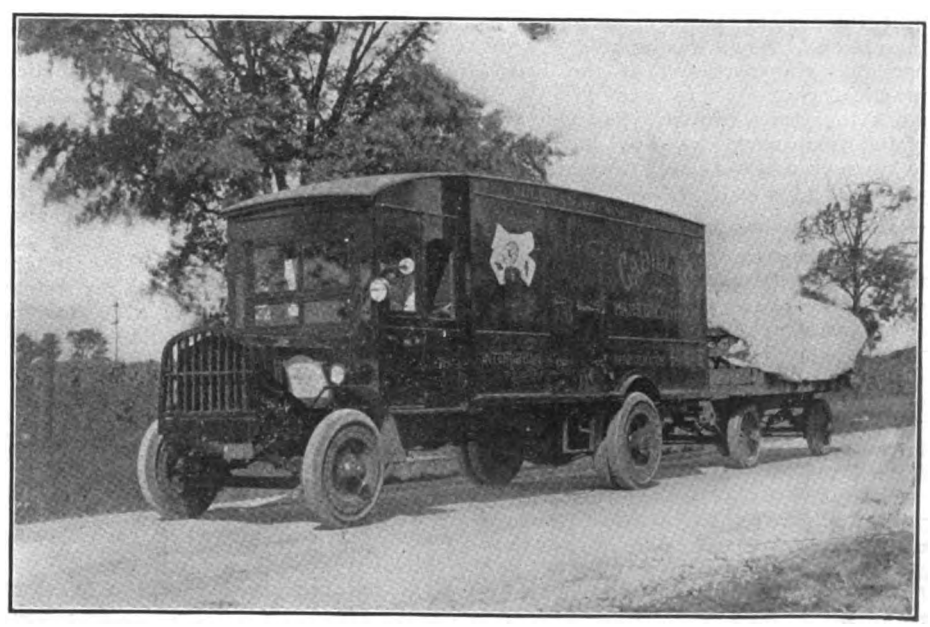
With the consolidation of the Hartford Auto Parts Co. and the Kinsler-Bennett Co., both manufacturers of universal joints and drives, at Hartford, Conn., a new company has been incorporated under the name of the Hartford Automotive Parts Co., with $1,500,000 capitalization. The plant formerly occupied by the Billings & Spencer Co. has been purchased to provide additional manufacturing facilities.

James M. Carney, formerly of the Hartford Auto Parts Co., is chairman of the board of the new company. Other officers are: President, J. McA. Johnson; vice president, F. R. Switzer; treasurer, H. A. Bigelow; assistant treasurer, T. C. Hudson. The directors include the above and H. A. Allen of the City Bank and Trust Co., and Shires Morris, president of Hart & Hegeman Co.

MICHIGAN MAY CONTINUE MOTOR EXPRESS PLAN.

A conference was held between representatives of the Highways Transport Committee, connected with the War Department Preparedness Board, and Gov. Sleeper and representatives of the Michigan Legislature on the proposal of an appropriation to continue the work of the transport committee, so as to lay out rural express routes and thoroughly organize the state in that new system. Until now the plan has been financed by the war board as a war measure. The board, believing that expenditures along that line now could be questioned as a war necessity, referred the committee to the Legislature, which, it is believed, will furnish the necessary funds.

J. H. Cooper has become eastern sales manager of the Walker Manufacturing Co., Racine. He was formerly vice president of the Endurance Tire and Rubber Co.



Packard Six-Ton Truck with Refrigerator Body and Trailer, Used by Sullivan Packing Co., Detroit, for Hauling Meats to To ledo, O.

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COOPERATIVE HAULAGE SERVICE

COOPERATION in highway haulage has been generally rejected simply because of the ignorance of business men of the possibilities of systematically directed and organized endeavor. There is no question that the principles that have been so gratifyingly productive in innumerable works and activities cannot be applied to road transportation, and this statement is borne out by the experience of a considerable number of manufacturers and business men of Chicago and vicinity who have established what is believed to be the first cooperative freight service by power vehicle in the United States.

Conditions seemingly justified the venture—for such it was—and with the purpose of giving it a reasonable trial 80 men identified with business interests in Chicago and cities within a radius of 50 miles organized the Western Truck Lines. The propositon was that ones directly connected with the company should receive service that was necessary for the conduct of their busines. There was no expectation of making it profitable in the sense of the ordinary investment. What was wanted was dependable transportation at the lowest practical cost. There was no sale of stock to attract capital. The members of the group made the initial investment to be assured of service that could not be otherwise obtained.



Two of the Fleet of Five-Ton White Covered Trucks Used by the Western Truck Lines for Scheduled Transportation Within a Radius of 52 Miles of Chicago.

Railroad Congestion Impelled Service.

Last spring and summer the railroads centering in Chicago, as elsewhere in the country, could not transport the volume of freight offered and delays of shipments were constant. This condition had varying effects upon business men and in hope of obtaining relief through service that they themselves controlled a careful survey was made, the company was formed and equipment purchased.

On Sept. 3 the service was inaugurated with daily schedules between Chicago and West Chicago and intermediate points. Shortly after it was extended and freight stations were established at Aurora, Elgin, Batavia, Geneva and St. Charles. As rapidly as possible it is planned to extend the service to points within a radius of 100 miles of Chicago. At present the longest haul is 52 miles one way.

The company has now been operating a sufficient length of time to thoroughly convince its promoters and patrons alike of its merit, both as a profitable investment and as a medium for quick and economical shipment of goods. As a matter of fact the enterprise was a success from the start. Serving territory in which some of the largest manufacturing plants of the country are located, the truck line is giving a freight service much faster than is possible by any other form of transportation. This is true especially with shipments of less than car load lots. Frequently freight is placed in the hands of manufacturers within a few hours from time of shipment, that if consigned by other carriers might be days in transit.

In the operation of the Western Truck Lines, railway precedents have been followed in so far as they have been found of advantage. A terminal station or depot, similar to those maintained by railroads, has been established in the heart of Chicago's shipping district at Clinton and Polk streets. This terminal building is an unusually large one with 25,000 square feet of floor space. All trucks load and unload at shipping platforms arranged in station order. Depots are located in all cities through which the trucks operate. Each depot is in charge of an agent, who assists in loading and unloading, makes out bills for freight and checks and collects bills for freight received—in fact renders a service for the truck line much similar to the duties of a local freight agent.

All trucks are operated over established routes, but delivery of shipments and pickup of shipments from and to points other than depots in Chicago and towns west are made at regular published rates, the rates being based upon actual service rendered on each specific shipment.

In the organization of the Western Truck Lines a broad plan for future development was followed. The president of the company, Edwin Anderson, was engaged in the teaming business in Chicago for 30 years. The vice president and general manager, George N. Lamb, was for years one of the foremost road builders in Illinois and has a wide experience in the operation of trucks. He was formerly superintendent of highways in Kane County, Ill. The board of directors is composed of men trained in handling financial and traffic problems.

High grade trucks, Whites, are used exclusively. They are all five-ton units, fitted with bodies best adapted to highway transportation service. Comfortable cabs protect the drivers during the severest weather. Only the most skilled operators are employed, thus insuring "on-time" schedules.

The company has found that shippers demand a high quality service and will not tolerate irresponsible truck lines that hold out as their only inducement for business a cut rate. The Western Truck Line has established rates low enough to encourage shippers to use the service and at the same time high enough to justify a responsible company to give the best transportation service possible.

Shipping Advantages Are Many.

A few incidents showing some of the advantages offered by this efficient truck line:

The Independent Pneumatic Tool Co. of Aurora, engaged on extensive government contracts, found it necessary to ship from their Chicago factory to their plant at Aurora, a number of large machines, which naturally, were of value to them only while in operation. The machines were loaded on trucks of the Western lines at the close of the day's business in Chicago and delivered to Aurora, a distance of 42 miles, before the Aurora plant opened for work the following day. There was no loss of time through the machines standing idle. The dispatch attending the transfer of the machines resulted in the tool company routing all its shipments of freight between Chicago and Aurora via the Western Trunk Lines.

Retail grocers have found that by using this service they save in time from five to 10 days in getting their goods from the wholesalers, thereby saving money upon each shipment due to cash discount rates allowed. A further saving is effected by the elimination of petty losses through damage in shipment. Shipment by truck also insures fresher stocks.

Farmers Are Constant Shippers.

Farmers were quick to take the advantage of motor transportation. They can ship one or more hogs to market on trucks passing their doors and save the money formerly paid stock buyers for handling their shipments. Nor is it necessary to hold hogs, all ready for market, awaiting the time to get together a sufficient number for a car load lot. Farmers using this service along the routes traveled by the trucks erect small platforms at the side of the road, placing on the loading platforms produce for shipment properly marked. The first truck along picks up the consignment and de-

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livers direct o the best market with no loss of time from work on the part of the farmer.

The Western Truck Lines adopted as its slogan at the outset, "The Best Way." Shippers in the territory covered, after giving the service a thorough trial, are convinced the slogan is not a misnomer. The company has handled thousands of shipments and has yet to receive the first complaint. Concerns entrusting the line with trial shipments have without a single exception become permanent patrons.

GENERAL MOTORS CORPORATION HAS INCREASED SURPLUS.

The balance sheet of the General Motors Corporation and subsidiary companies, including five months' operation of the Chevrolet, for the year ending Sept. 30, 1918, showed an increase of $18,432,388 in the company's surplus over the previous year.

Net profits, after expenses, taxes, depreciation, etc., were deducted, amounted to $35,718,459. After Federal taxes and other expenditures were made the remaining net profit was $19,376,782. The amount held for outside shareholders was $332,756, the General Motors proportion being $19,044,026. Preferred dividends amounted to $885,769 and undivided profits to $18,158,257. The profit and loss surplus on Jan. 1, 1918, was $11,508,392, with the addition of $8,065,083 through the acquisition of Chevrolet assets on May 2, 1918. With the undivided profits of $18,158,257, the total was $37,731,732. Deducting the common dividend of $7,790,952, the profit and loss surplus amounted to $29,940,700.

AMERICAN MOTOR PLANS TO BUILD NEW TRUCKS.

A new truck will be marketed by the American Motor Truck Co., Newark, O., within the next two months. The truck will be of two sizes, 1½ and two tons. Later a 3½ and a five-ton truck will be made. It is planned to build 300 trucks this year. The company bought the assets of the Blair Motor Truck Co. a year ago, but will make a truck different from that made by Blair. Since incorporation the company has been building two-men tanks for the government. The officers are: President, J. D. Potter; vice president and production manager, E. B. Alspach; secretary and treasurer, H. S. McCoy; chief engineer, C. H. Doty; superintendent, H. E. Cavendish.

NASH MOTORS CORP. ENTERTAINS JAPANESE COMMISSION.

A commission of Japanese army officials, making a tour of the military manufacturing centers of the United States, has visited the Nash Motors Corp., Kenosha, Wis. Charles W. Nash entertained them at luncheon.

The Irwin Transmission Co., Chicago, has increased its capitalization from $500,000 to $2,000,000 under the laws of Delaware.

Development of the Standard Army Motor Truck

J. G. Utz of the Society of Automotive Engineers records the history of the United States standard motor truck as follows:

"Those who have kept informed on the great problems confronting the United States army in the pursuit of the war, realize that the question of transportation is one of the most difficult ones. It was only six years ago that the Quartermaster Department recognized the importance of motor truck transportation, and when the campaign against Mexico was opened in 1916 the desirability of limiting the number of designs became fully evident.

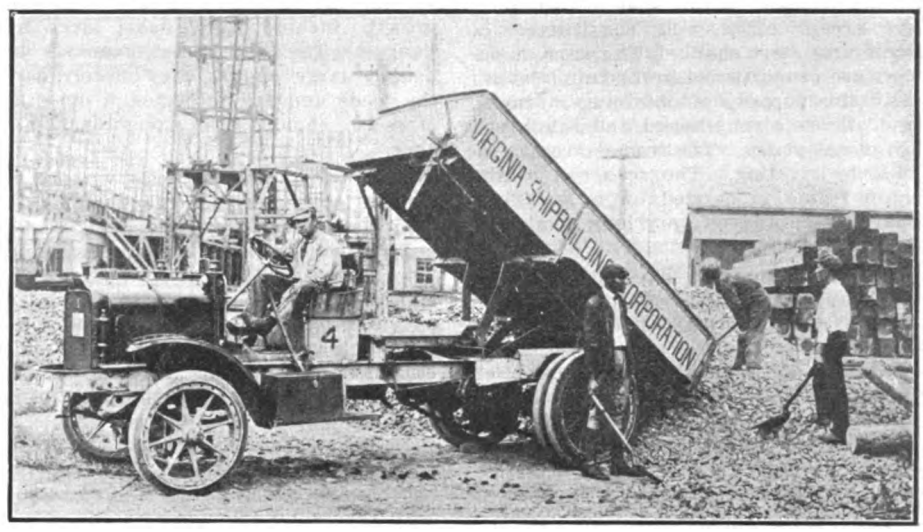
"The United States army bought its first 1½-ton truck as late as 1913, and by 1916 it had accumulated experience with but a limited number. In that year Col. C. B. Baker, then chief of transportation in the office of the quartermaster general, invited the Society of Automotive Engineers to send representatives to Washington to confer with army officers and representatives of about 50 truck builders to cooperate in the preparing of specifications for a standard 1½-ton and a three-ton truck. This conference was held on May 8, 1916, and the specifications were issued in June, 1916. On these plans trucks were hurriedly purchased for use against Francisco Villa. This gave the army the first good chance to test the usefulness of motor transportation under trying conditions as they existed on the Mexican border.

"Shortly after the declaration of war on Germany Col. Baker's staff entertained hopes of having a completely standardized military truck.

"They proceeded to have new drawings and specifications made, including all the suggestions and experiences recorded to that date. A number of members of the S. A. E., including J. G. Utz, who for several months was in charge of the Motor Transport Engineering Department, were asked to assist in the design of the new truck and they commenced work in Washington on Aug. 1. By Oct. 1, 1917, all details and designs were completed and 10 days later one sample war truck each of class A and B were ready for testing. One truck was driven overland to Washington and the other had to cross the Allegheny mountains. On Oct. 19 the trucks, after very successful trips, were presented to Secretary Baker, and driven also to the White House, where they were examined by President Wilson.

"The general staff and Secretary Baker at once authorized the production of 10,000 class B trucks, and to execute this great task the Military Truck Production Section of the Transportation Division of the Quartermaster's Corps was organized, composed of civilians only. The work was distributed among 17 truck builders, each to make 500 to 1000 trucks. The first five trucks were available Jan. 10, 1918. By April, 1918, production was proceeding so satisfactorily that the general staff authorized the purchase of 8000 more trucks, and in August, 1918, an additional 25,000 were authorized, but the armistice was signed before the last order was far advanced.

"It has, however, been clearly demonstrated that the class B trucks are not equalled in performance by any other type of truck used overseas. The experience acquired by the automotive engineers will be immediately available in their peace time occupations, and the motor transport corps acknowledges that the successful solution of the motor truck problems is in a large measure due to the cooperation of the Society of Automotive Engineers."



Economic Use of Large Trucks: White Five-Ton Units Hauled Crushed Stone for the Concrete Construction at the Yard of the Virginia Shipbuilding Corporation, Alexandria, Va.

BALLIET HEADS RELIANCE TRUCK CO.

John M. Balliet is now president and general manager of the Reliance Motor Truck Co., Appleton, Wis., succeeding Ira L. Miller, who retired. The company was organized a year ago from the Racine Motor Truck Co., Racine, Wis. A $100,000 plant was built in Appleton.

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FRUEHAUF NEW MODEL TRAILERS

FRUEHAUF semi-trailer and trailer units, built by the Fruehauf Trailer Co., Detroit, Mich., have been perfected and those that are now produced are considerably improved as compared with those that were first manufactured. The purpose of the company is to build what will afford the largest measure of dependable and economical service and the engineering department has endeavored to design what experience has proven will be the most satisfactory to those requiring highway transportation.

Fruehauf units are in two types, the semi-trailers, which are built with rated carrying capacity of 70 per cent. of four, six, eight and 10 ton loads, and the trailers (four-wheeled) which have rated capacities of 1½, three, six and seven tons respectively. The same general characteristics of design obtain in both types, but the construction necessarily differs somewhat.

The frames of the semi-trailer units are exceptionally well constructed of structural steel channel. The cross members are proportioned to the frame length with the purpose of obtaining strength, and all are strengthened and reinforced by gusset plates. The frames are assembled by riveting. The rear end of the main frame is carried on a sub-frame that is mounted on very long semi-elliptic springs.

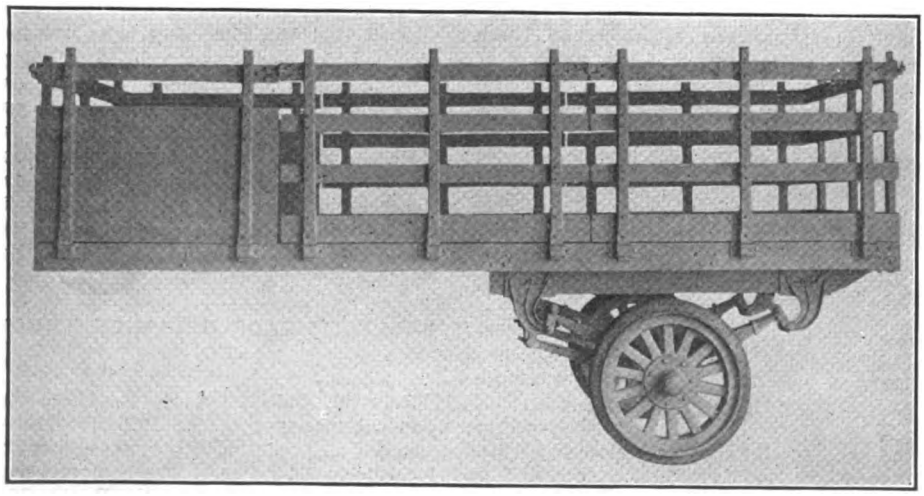
These springs are carefully designed for heavy duty and have large factors of safety. The experience of the company's engineers is that the springs for heavy loads should be flexible, for this minimizes tire and bearing wear and lessens the upkeep expense on all components of the unit. Not only this, less power is required to move a given load well distributed and carried on flexible springs.

The spring hangers are massive and are designed for the springs to be mounted under the frame and not outside of it. The spring shackles are drop forged from special manganese steel, and the spring bolts are turned from solid stock, are heat treated and provision is made for oilers that effectively lubricated the bolts and spring eyes. The bolts are very large and they are fitted to steel bushings, that are renewable when worn in both shackles and the spring eyes. The entire construction is well thought out and developed with much care to obtain endurance in heavy service.

All units having greater rated capacity than four tons are equipped with radius rods to obviate draw stresses upon the springs, and when these are fitted a special spring hanger, such as shown in the accompanying illustration, is used, the radius rod being attached to a special bracket under the dead axle and pivoted on a boss or extension of the front spring hanger, this reducing the angle of the rod and making the draw more nearly in a straight line, especially when the units are loaded. The rods are fitted with hardened steel pins and bushings, which are also renewable when worn. The axle of the semi-trailer is a steel rectangular section with large wheel spindles. The wheels are artillery type, of second growth hickory, and have large hub flanges. The tire dimensions are unusually large and as they merely carry the loads and are subjected to no other stresses, should give exceptional mileages.

The trailer units are built without the conventional steering knuckles for the front axles, the axles used being rectangular steel forgings of great strength. The wheels, axle and springs are designed to turn freely on twin circles and a center plate, this construction obviating side sway, affording greater stability and necessitating the trailer following the tractor. With this design the springs may be placed close to the wheels, so that the wheels may "cut" under the frame and turns can be made in very short radius. While these units are built with reversible and non-reversible types, the use of the reversible or double-end steer is less often required because of the short turning possibilities.

These trailers are designed so that frames of any desired width may be installed, which is a very desirable factor, for practically 75 per cent. of the expense is obviated where platform bodies are required.



Fruehauf New Model Eight-Ton Semi-Trailer, the Main Frame Mounted on a Sub-Frame Carried by the Wheels and Springs. Note the Radius Rods Attached to the Front Spring Hanger.

FORD MUST DISTRIBUTE $19,000,000 IN DIVIDENDS.

The Michigan Supreme Court has confirmed the decree of the Wayne County Court in ordering the Ford Motor Co. to pay special dividends of $19,000,000 to stockholders, but the decrees of the lower court stopping expansion of the business of the company in its extensive smelting plant at River Rouge were overruled.

The contention of Mr. Ford that the Michigan laws, when they stop organization of a corporation for more than $50,000,000, meant for organization purposes only, was sustained. Capital investments, such as profits, borrowed money, are not controlled by the law limiting capitalization.

The court held that Mr. Ford had been arbitrarily usurping the powers of the majority of stockholders, and was in substance making the rights and privileges of the other stockholders incidental to his altruistic plan to let the public have the benefit of company profits in a lower price for automobiles.

The court assessed one-third of the cost of the case to Mr. Ford and two-thirds to Dodge Bros.

RURAL MOTOR EXPRESS FOR LONG ISLAND.

A rural motor transportation company has been established to serve all points on Long Island, N. Y., and arrangements have been made with many shippers for the New York markets. The operating company is incorporated under the name of the Long Island Motor Transportation Co., with offices at 1847 Broadway, New York City. There will be a receiving depot in New York and a large central depot in Long Island City.

BIG TRUCK ORDER FOR SMALL OREGON TOWN

The Pendleton Auto Co., Pendleton, Ore., distributor in Pendleton and vicinity for the Duplex Truck Co., Lansing, Mich., has placed an order for Duplex trucks worth $300,000. Pendleton has a population of only about 5000. Many of the trucks will be used on wheat ranches surrounding the town.

MILWAUKEE TIRE DEALERS FORM ORGANIZATION.

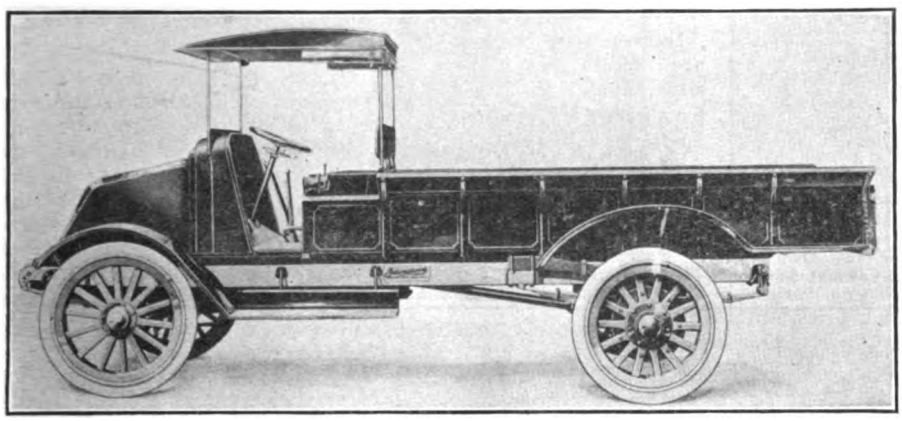
The Tire Dealers' Association of Milwaukee has been formed by tire and supply dealers of Milwaukee, with these officers: President, Russell L. Stephens; first vice president, George A. Brown; second vice president, Henry F. Stenzel; treasurer, Lawrence J. Engel; secretary, H. A. Packard.

The Pierce-Arrow Motor Car Co. announces that prices on its cars and trucks will be unchanged until Oct. 1.

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MODEL G INTERNATIONAL TRUCK

Largest of a Series of Four Machines, Having Engine with Removable Cylinder Walls and an Internal Gear Rear Axle, All Parts of Which Are Interchangeable



Model G International Chassis Equipped with a Canopy Top and a Flareboard Express Body—Capacity 4000 Pounds.

INTERNATIONAL trucks are built by the International Harvester Co. of America, at a point at Akron, O., which was developed especially for the production of power vehicles, and claim is made for the company that it is the largest producer of freight trucks in the world. The International Harvester Co. is best known as a manufacturer of agricultural implements, it being the consolidation of different concerns that were especially successful. Its headquarters is at Chicago, but its works are located in different sections of this country, in Canada and in other nations.

These plants are usually designed and equipped to produce series of farming machinery, the products being standardized and turned out in very large volume. In other words, the concern operates a considerable number of shops that have been specialized on machines and implements that have been carefully developed, each division being separate in a sense and building highly perfected products that are sold in practically every country of the globe.

The company has manufactured trucks and farm tractors for years in addition to farming machinery, and these were designed to meet the requirements of farmers first of all. The original trucks were known as I-H-C vehicles and were constructed to designs that were believed best adapted for use on country roads, with large diameter wheels to obtain clearance. They were as simple as engineering science and experience could produce. These vehicles were from every point of view dependable and reliable and thousands of them are now in use, but with a view of meeting the demands of all truck buyers, especially in cities and towns, which were seemingly the potential markets, other designs were produced to conform to conventional practise of the power vehicle industry.

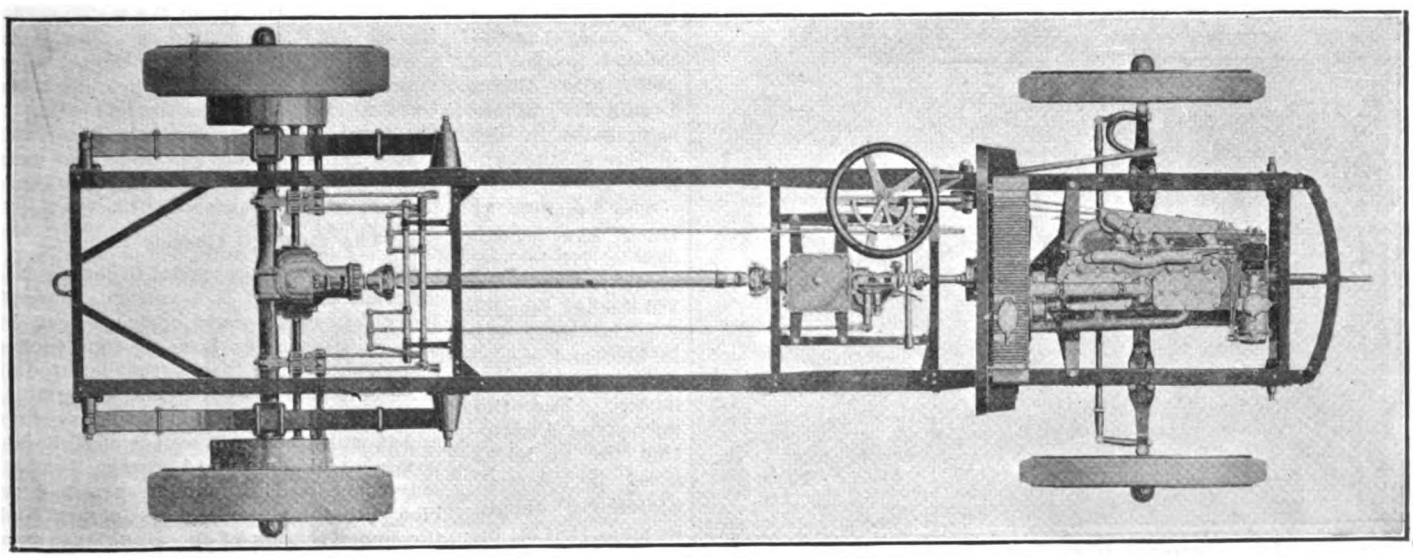
Designs Developed by Long Experience.

This statement is made to explain why two distinct types of vehicles have been turned out by the International Harvester Co. The older types, which are no longer built, are known as the I-H-C machines, and the later models are the International. The company began experimental work in power vehicle construction nearly 15 years ago. The machines were very carefully designed. The purpose was to produce what could be sold throughout the world—not a product for a domestic market alone. International trucks have been unusually well designed because of the fact that the company proposed to sell them in many instances direct, and success or failure depended upon the efficiency and practical economy of these machines.

The company has the largest and probably the best organized sales department in the world for marketing trucks, tractors and farm implements. In the United States alone it has 90 different branches, these being in 33 different states. These branches are located with reference to distribution of farm implements and machinery, but there are one in each of 16 states, two branches in each of two states, three branches in each of four states, four branches in each of six states, five, six and seven branches respectively in each of three states, and eight branches in each of two states. These branches are the centers from which distribution is made, and from them many thousand agents and sales representatives are supplied. In practically every commercial center of the country the company is represented, at least for the sale of farm implements and tools, and while not all of these agencies sell trucks, a large number do.

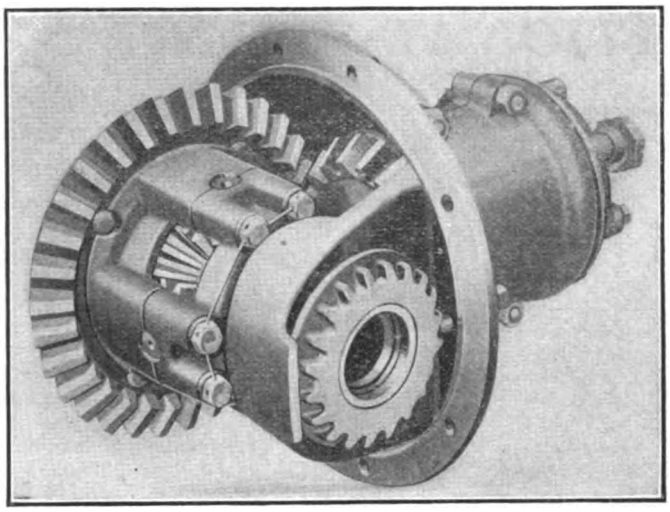
Has Very Large Sales Organization.

In a similar manner the sale of trucks, tractors and machinery is organized in practically all foreign countries. Many branches are established, which have agencies in trade and industrial centers,



Plan View of the Model G International Chassis, Showing the Strong Frame Construction and the Power Transmission System and Special Type Internal Gear Rear Axle.

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The Differential Gearset of the International Internal Gear Rear Axle, Removable as a Unit with the Cover of the Housing. The Manner of Locking Adjustment of the Differential Shown.

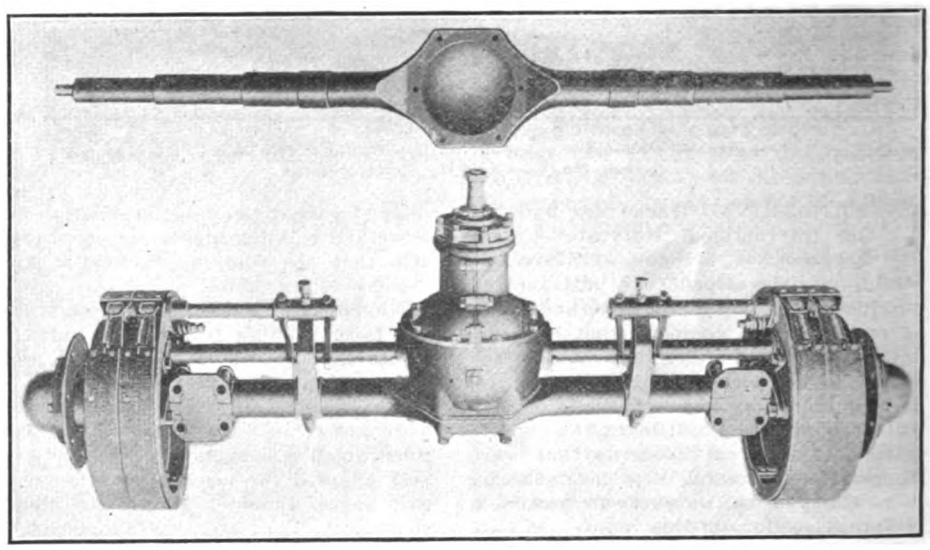
and in other lands there are general agents who are represented wherever practical. Thus there is a very strong organization both in America and abroad.

The question may be asked what bearing this immense trade organization has so far as the production of trucks is concerned, and the answer may be made that it has two applications. The first is that the company is probably better known commercially than any other that builds trucks and must maintain through the quality of the vehicles the reputation it has established. The second is that the service departments are organized to meet the requirements of buyers of all products, and each of these departments is operated by the same system, no matter where the branch or agency, so that the owners of machines can rely upon a uniformity of service. There is hardly need of emphasis of the importance of service, but the fact that the company is so completely represented means that owners can obtain parts for renewals in the event of need, or expert advice or assistance when either are desirable, with little delay. It goes without saying that the larger the organization the lower the overhead cost, and this can be reflected in the prices.

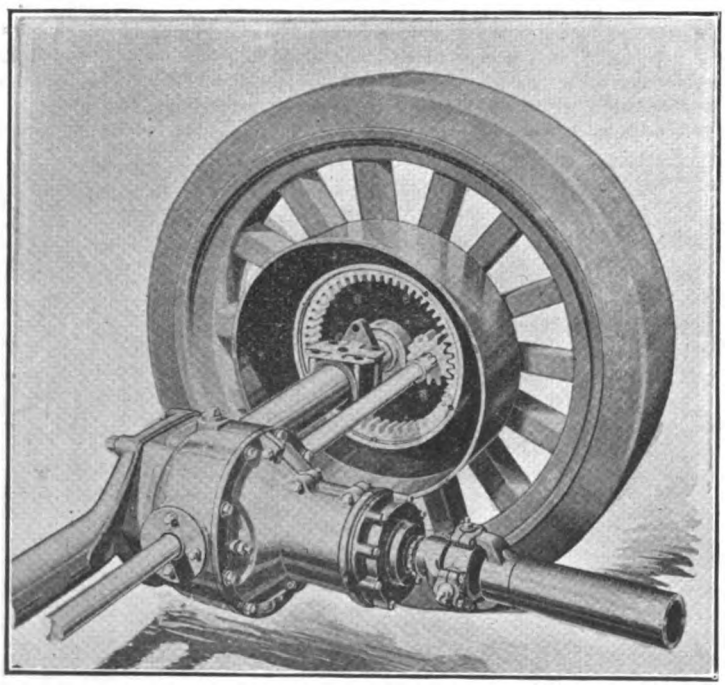
International trucks are built in four sizes, model H, 1500 pounds capacity; model F, 2000 pounds capacity; model K, 3000 pounds capacity, and model G, 4000 pounds capacity. These machines are corporated with the dash and are fitted with the Renault type of engine hoods, this insuring protection of the radiators in the event of coming into collision with any object, obviating repair and the delay that might result from restoration or replacement of this very necessary auxiliary. Claim is also made that this construction is more accessible than where the radiator is ahead of the engine, which minimized labor when work is needed on the power plant. This applies both to attention and repairing.

Two Types of Engines.

The engine for the three smaller trucks are four-cylinder, four-cycle, water cooled, vertical, L head types, having cylinder bore of 3½ inches and stroke of 5¼ inches, having rating by the S. A. E. formula of 19.60 horsepower, but they will develop considerably in excess of this figure. The cylinders of these engines are cast en bloc with the water



The Complete International Rear Axle, with Brake Assembly, but Without Wheels, and the Dead or Load Carrying Member with Wheel Spindles Integral.



Section of International Rear Axle Without Brake Assembly, to Show the Position of the Driving Pinions Ahead of the Load Carrying Member and the Wide, Protecting Brake Drum.

standardized in design and the intention is to continue them practically without change for such periods as are desirable. Of these the model G is the latest production and this differs from the others principally in the design of the engine.

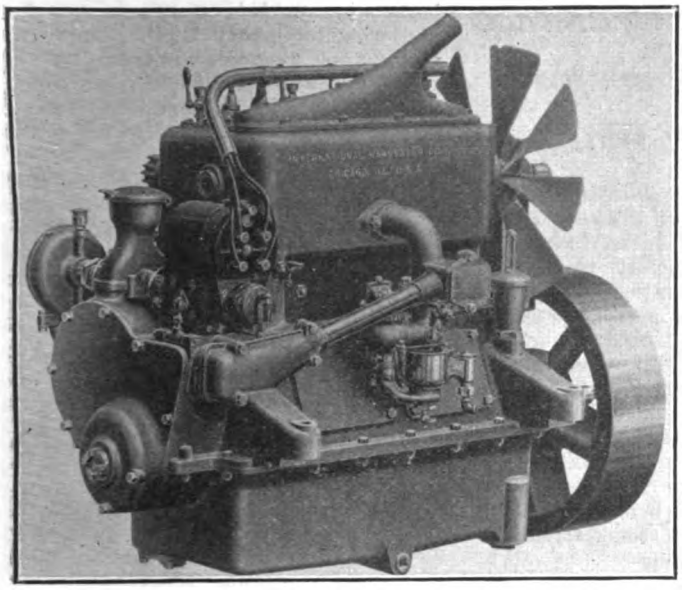
The model H truck has wheelbase of 115 inches, model F 128 and 146 inches, model K 128 and 146 inches, and model G 135 and 160 inches. For the purpose of description the model G truck is selected. Statement should be made that all International trucks have radiators in-

jackets integral, there being large head plates that are detachable and which carry the outlet manifold for the water jacket. This plate has a deep longitudinal channel from rear to front that gradually increases in depth and which directs the movement of the water across the heads of the cylinders. The lower section of the crank case is the oil reservoir and the base of the crank chamber. On the left side of the upper section of the crank case are two large removable plates and by removing these the main and connecting rod bearings are reached for inspection or adjustment.

The Model G Chassis Engine.

The engine of the model G chassis is a different type. It is a vertical, four-cylinder, four-cycle, water cooled, I head design with cylinder bore of four inches and stroke of five inches, that is rated at 25.60 horsepower by the S. A. E. formula. This engine is designed for heavy duty and it will produce in excess of 30 horsepower at the standard governed maximum speed. The cylinders are cast en bloc with the water jackets integral and the upper section of the crank case is a unit with the cylinders. The water jacket is deep in the sense that it extends

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Left Side of the Block Cast Four-Cylinder Engine Used for the Three Smaller Sizes of International Trucks.

the full length of the expansion chamber of the cylinders, this insuring efficient cooling, and the construction is such that the water chambers may be uniform and the walls equal in thickness, this making for more effective radiation.

One of the features of this engine is the construction of the cylinders, which are not bored and reamed to size as is the usual practise. The cylinder block is cast without cylinder walls, for these are cylindrical sleeves that are cast and machined separately and are pressed into the block after the machining has been completed. The value of this construction is first that the cylinder walls are perfect and are uniform in thickness. The second is that in the event of the sleeve being worn or scored or a defect of any kind developing one or all may be replaced at comparatively small expense without renewing any other part, while with the conventional form of engine block the block might be saved by reboring, fitting new pistons and rings, or there might be need of discarding the unit entirely. The sleeves are fitted with packing that is perfectly oil and water tight.

This form of construction has been adopted by several builders of tractor engines to minimize the cost of repair in the event of the cylinders being worn excessively by abrasives drawn into the engine with fuel, and statement is made that the design has been found extremely satisfactory and serviceable. Cylinder sleeve replacement, should it be necessary, can be done quickly, and as the sleeves are interchangeable there can be no uncertainty as to results.

Block Integral with Crank Case.

The engine block is cast with a forward extension that houses the timing gearset and the rear support arms integral with it. At the left side are two large circular openings that are covered with plates, which afford access to the main and connecting rod bearings for examination or adjustment. The head is cast separately, this having large water chambers about the valves and the spark plug bores. The lower section of the crank case is deepest at the forward end, where the oil reservoir is located. The pistons are cast from the same metal as the cylinders and these are fitted with three rings each.

The crankshaft is a three-journal type, and it is drop forged from a special steel, heat treated and ground to dimensions, it being 1¾, two and 2¼ inches diameter respectively from front to rear, and the journals are 4½, 3¼ and 4½ inches length respectively in the same order, there being a total bearing length of 12¼ inches. The crankpins are two inches diameter and 2¼ inches length. The camshaft is a three-journal unit with the cams integral. It is drop forged from high grade steel, is carefully machined, case hardened and ground. The connecting rods are drop forged steel I sections. The main and the crankpin bearings are babbitt metal in bronze cages and these are fitted with shims for adjustment.

The valves are large diameter and are mounted in the head, the entire mechanism being enclosed with two covers, each enclosing a group of four rocker arms. These covers are easily removable for examination or adjustment, and there are means for lubricating the rocker arms without taking off the covers. The push rods are housed in steel tubing and the valve tappets are in dust tight covers that fully protect them from abrasives. The timing gearset is very simple, one gear driving the camshaft, and a gear driving a cross shaft mounted on the forward end of the engine crank case that drives the magneto.

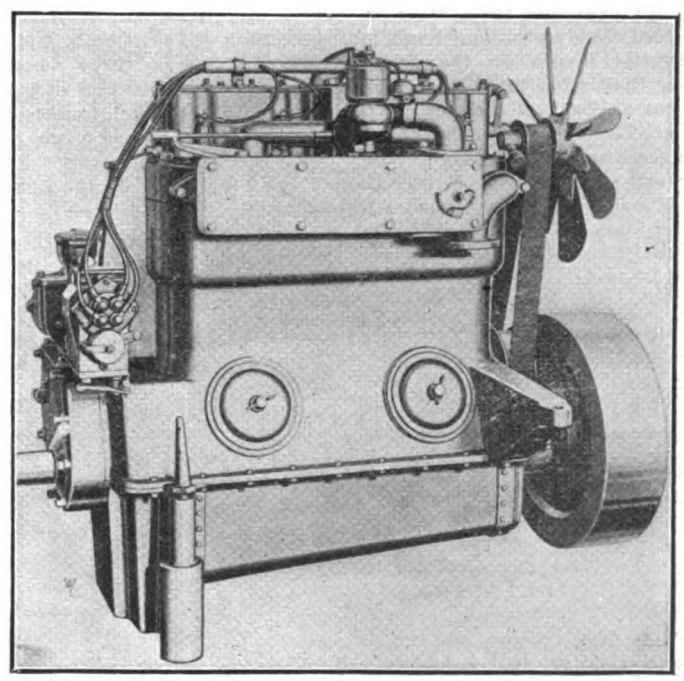
The engine is cooled by a thermo-syphon circulation of water through the cylinder jackets and the large finned tube radiator with auxiliary tank that is incorporated with the dash, and radiation is promoted by a large fan carried on a ball bearing on an adjustable bracket at the rear of the engine block that is driven by a flat belt from a pulley on the rear extension of the crankshaft. The radiator is spring suspended and it is protected from vibratory and chassis distortion stresses. The engine is equipped with a governor built by the company, a centrifugal flyball type, that is driven by the cross shaft of the engine and is set for a maximum speed of 12 miles an hour.

The engine is lubricated by a combination force feed and splash system, the oil being drawn from the reservoir through a screened intake and forced to the main bearings and timing gearset. The excess oil drains to the base of the crank chamber, where it is collected in troughs and distributed by splash of the connecting rod big ends to the cylinder and piston walls, the wristpins, camshaft bearings, the cams and valve tappets. The source of ignition current is a Dixie or Eisemann magneto, and the fuel is supplied through an Ensign carburetor.

The Power Transmission System.

The power plant is suspended in the chassis frame at three points, the rear support arms being bolted to the chassis frame and the forward end mounted on a trunnion in a frame cross member. The clutch is a multiple dry disc type of International design, the discs being faced with asbestos fabric. Statement is made that it is very easy of engagement and it may be easily adjusted, requiring practically no attention. The clutch shaft has one universal joint at the coupling with the main shaft of the transmission gearset, which is a sliding gear selective type having three forward speed ratios and reverse. The gears and shafts of the gearset are very large and it is designed for heavy duty. It is mounted on three points between the center cross members of the frame.

The main driving shaft is a large steel tube with universal joints at either end, that is coupled to the pinion shaft of the internal gear driven rear axle. The axle is built to International design and consists of a large round steel drop forging with the wheel spindles integral, the center of which is expanded to form a seat for the housing of the differential gear-



The Power Plant of the Model G Chassis, Having Overhead Valves and Interchangeable Cylinder Sleeves. The Circular Hand Holes Afford Access to the Crank Case.

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set, which is bolted to it. This unit is heat treated and is claimed to have a very large factor of safety. The differential gearset housing that is bolted to the axle has a large front cover plate, which carries in a forward extension the pinion shaft and its bearings. The driving shafts are extended from this housing, the outer ends being mounted in the brake flanges that form the inner covers of the cases for the internal gears. The wheels and the differential gearset are mounted on eight very large roller bearings that are interchangeable, and the pinion shaft is also carried on a large bearing. In the entire assembly there are no right or left parts, so that there can be no error in assembling. The bolts of the axle are locked and the nuts are secured so that there is no possibility of their loosening. The design of the axle is such that the pinions of the driving shaft are forward of the dead axle, a construction that is claimed to lessen the driving stresses upon the wheel bearings.

Other Chassis Details.

The frame is pressed steel channel section that is 5⅞ inches deep and it has wide webs. It has six cross members and two diagonal rear braces, all strongly reinforced and gusseted. This is suspended on semi-elliptic springs, the forward set being 40 inches long and 2½ inches wide, and the rear set 56 inches long and three inches wide. The front axle is a steel I section drop forging, heat treated, and the steering spindles are heat treated nickel steel. The knuckles are very large. The spindles are fitted with taper roller bearings. The wheels are artillery type, wood, equipped with 36 by 3½-inch pressed on solid rubber bands forward, and the rear wheels have shoes of the same type, 36 by six inches.

The steering gear is at the left side and the control is by foot pedals for the clutch and the service brake, with the gear shifting and emergency brake levers at the center of the footboard. There is a foot accelerator and hand ignition and throttle levers on the steering wheel. The fuel is fed through a vacuum system from a 17-gallon tank under the driver's seat. The two sets of brakes are internal expanding within drums on the rear wheels. These are self adjusting.

The chassis is equipped with driver's seat, fenders, running boards, oil dash and tail lamps, mechanical horn, jack and set of tools.

DES MOINES DEALERS ELECT OFFICERS.

The Des Moines Automobile Dealers' Association elected these officers: President, Dean Schooler; vice president, W. W. Sears; treasurer, C. L. Herring; secretary, C. G. Van Vliet.

FIRST TRACTOR AND TRUCK SHOW IN LANSING.

The first tractor and truck show in Lansing, Mich., was held in the Republic Motor Sales building, Feb. 10-15. Trucks, tractors, disk plows and wood buzzers were displayed.

Army Motor Ordnance Big Factor for Winning War

Lieut. Col. William G. Wall of the Ordnance Department, United States Army, who has been intimately connected with the design of tractors, trucks and other automotive apparatus used by the Ordnance Department, presented an instructive paper on the Automotive Ordnance Apparatus at the annual meeting of the Society of Automotive Engineers in New York.

He told how at the start of the war it was decided that Ordnance Department trucks should be of the four-wheel-drive type. To save time two makes then in general use, the one-ton Nash Quad and the three-ton F-W-D were promptly adopted as standard equipment.

Several types of bodies were used on these chassis. One of them carried a small machine shop regularly equipped with an assortment of machine tools, pneumatic hammers, electric drills, oxy acetylene welding outfit and numerous hand tools, the power being furnished by a four kilowatt generator, driven by a four-cylinder, 2⅝ by four-inch engine. One thousand of these units were built.

On another was mounted an artillery supply body, carrying additional tools and all necessary spare parts for guns and caissons. Then there were equipment repair trucks, carrying a heavy sewing machine, a stitching machine, vises and full equipment for making repairs on all leather and canvas goods and small arms. Light repair trucks are also used for emergency cases, built with steel body on a Dodge chassis.

The Ordnance Department later proceeded to develop its own four-wheel-drive truck and tractor, operated with a four-cylinder Wisconsin engine. This truck had 36 by seven-inch tires, weighed 10,500 pounds and had a carrying capacity of three tons. The tractor had a drawbar pull of 5000 pounds.

A special chassis was found necessary for the use of the reconnaisance, machine gun and staff observation cars. The White and the Commerce one-ton chassis were adopted.

To haul heavy guns over bad terrain it was found desirable to use track-laying tractors. Three sizes were designed by the ordnance engineers, they were of 2½, five and 10 tons capacity. The 2½-ton tractor had an eight-cylinder, 3⅛ by 5⅛ inch L head, V type Cadillac engine, delivering 70 horsepower at 2600 revolutions per minute. This has a normal speed of 12 miles per hour, but will pull a 57-inch gun on level ground at 20 miles per hour. The drawbar pull was 4000 pounds on low gear.

The five-ton tractor was designed to pull the 9.2 howitzer in three loads, or the six-inch howitzer in one load. Its engine is a four-cylinder, 4¾ by six-inch, developing 56 horsepower at 1200 revolutions per minute.

The 10-ton tractor has a four-cylinder, 6½ by seven-inch engine, developing 55 horsepower at 600 revolutions per minute, weighing about 21,000 pounds and giving an average pressure on the ground of 7½ pounds per square inch. Speed, six miles per hour. This tractor pulls 8000 pounds on the drawbar on low gear.

One of the latest designs is the Mark seven tractor caisson, a caterpillar cargo carrier capable of carrying a five-ton load up a 45 per cent. grade. Its engine is the same as in the five-ton tractor.

A number of heavy guns up to the eight-inch howitzer, were placed on track laying tractors carrying a total weight of 55,000 pounds as a speeding at four miles per hour. Various tractors up to the 10-ton size were also built for moving smaller guns and tanks.

The motorized ordnance thus developed marked a great advance in war methods. The equipment to move heavy guns rapidly makes it possible not only to follow an infantry advance very closely, but move the guns so rapidly from one position to another that it is practically impossible for the opposing artillery to secure the correct range.

MELHUISH AT FULTON PHILADELPHIA OFFICE.

H. T. Melhuish, for a considerable period advertising manager of the Fulton Motor Truck Co., Farmingdale, Long Island, N. Y., is now in charge of the Fulton office in Philadelphia, succeeding M. R. Sanborne, who is now in the Kansas City office. Mr. Melhuish is a brother of William Fulton Melhuish, president and founder of the Fulton Motor Truck Co. Putnam Drew will handle the advertising and publicity work at the Fulton factory. He is well known in motor truck publicity, having been for four years with the R. E. Taylor Corporation and previously with other extensive publicity campaigns. For 25 years he was a newspaper man in New York.

HARRY E. BRADNER DEAD.

Harry E. Bradner, who contributed much to the growth of Lansing, Mich., as a motor car and automobile parts manuturing center, died recently from pneumonia. He recently resigned as general manager of the Auto Body Co. because of ill health. He had been identified in an executive capacity with the firm since it was formed, in 1901. At the start the capital stock of the company was $20,000, but recently it was increased to $2,000,000. Mr. Bradner was also connected with the Auto Wheel Co., the Gier Fressed Steel Co. and the Duplex Truck Co., of which concern he was vice president.

The Wilmington, Del., show may be postponed until April, as the new addition of the Hotel Du Pont, where it is to be held, will not be completed until then.

The Armdale Truck Renting Co., 5 Beekman street, New York City, has been chartered in New York state, with $30,000 capitalization.

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KENTUCKY WAGON MFG. CO. BUYS DIXIE MOTOR.

The Kentucky Wagon Manufacturing Co., Louisville, Ky., has bought the Dixie Motor Car Co. This purchase of the "Dixie Flyer" gives the Kentucky company complete series of passenger cars and trucks. For a number of years it has been manufacturing Old Hickory Motor Trucks.

It also places the Dixie distributors and dealers in the enviable position of having vehicles manufactured by a company that stands with the best in the country, both financially as well as in management. Arrangements have been made for materially increased production necessary to take care of the large domestic and foreign business.

Robert V. Board, president of the Kentucky company, and who was also president of the Dixie company, predicts a very bright future for his concern, and is especially pleased with the prospects for 1919.

HURLBURT TRUCK CO. IN FINANCIAL STRAITS.

An involuntary petition in bankruptcy has been filed in the United States District Court in New York against the Hurlburt Motor Truck Co., which has a large plant at Third avenue and the Harlem river, in that city. Three creditors, whose claims were small compared to the size of the company, filed the petition. It was stated that while business was booming for the company, since it has on hand orders for trucks valued at $3,000,000, there was a decided stringency in cash to meet outstanding obligations.

It was said that the liabilities were in excess of $500,000 and the assets about $250.000, chiefly in the plant and stock of the concern.

Judge Mayer refused to appoint a receiver in bankruptcy, thus permitting the company to continue business. A plan of reorganization was to be arranged.

MOTOR AND TRACTOR DEALERS AT STOCK SHOW.

Motor car and tractor distributors met with splendid results in connection with the National Western Stock Show in Denver. The MacFarland Auto Co., Buick distributor for Colorado and Wyoming, the Cadillac Motor Co. and the Mountain States Tractor Co., Fordson distributor, took advantage of the occasion to hold dealers' conventions.

AMERICAN TRAILER CO. SELECTS FACTORY SITE.

The American Trailer and Body Co., Houston, Tex., has selected a site for its plant, where trucks, bodies and trailers will be built. This is a new company, chartered by J. H. Fleming, I. C. Timmins and J. Campbell Bailey.

The National Association of Motor Truck Sales Managers will meet in Philadelphia, April 10-12.

Smith Aircraft Motor Is 10-Cylinder, Air Cooled

A new engine that may surpass the Liberty engine is being developed by John W. Smith of Philadelphia, a member of the Society of Automotive Engineers. The new engine is expected to deliver the same horsepower as the Liberty. It has 10 cylinders, 5½ inch bore by 6½ inch stroke, with an estimated weight of but 1.3 pounds per horsepower. A British engine with nine of these cylinders is said to develop 310 horsepower, and weighs 640 pounds, or 2.96 pounds per horsepower. The Liberty engine, which is of the multi-cylinder V type, weighs in the 400 horsepower size over 2.7 pounds per horsepower, with accessories and including cooling water and radiator.

Addressing the S. A. E. at the annual convention in New York, Mr. Smith explained that during the first two years of the war he was in England conducting experiments on fixed radial air cooled engines for the British government. Two designs were perfected and both have seen actual service.

Official British reports regarding the 10-cylinder engine credit it with a fuel consumption of less than 0.50 pounds of gasoline per brake horsepower hour and a lubricating oil consumption of less than 0.02 pounds per brake horsepower hour, while the nine-cylinder engine is reported to use less than 0.45 pounds of fuel per brake horsepower hour. These figures indicate a remarkably high economy of operation.

It has been found that in airplane propellers the center portion is not effective for propelling, hence a compact engine like the Smith radial can be placed to advantage within this neutral zone, and still obtain the required cooling without the use of a water jacket. To make this sufficiently effective the cooling air in the case of the Smith engine is made to enter the crank case and is forced against the hot pistons. The exhaust valves are also cooled by contact with the cold entering charge. In addition the cylinders are fully ribbed. The author stated that the superior advantages of the air cooled engine were fully realized at the time the Liberty engine was being built, but various details of construction had not reached the same degree of perfection, and since it was imperative to produce many engines of known characteristics without delay, the Bureau of Aircraft Production concentrated its efforts on the Liberty water cooled engine.

SERVICE OF ONE FLEET SELLS 87 TRUCKS.

One year ago the Idaho Falls Transfer and Storage Co., Idaho Salls, Ida., was using 30 teams of horses and wagons and one Republic truck. Today the company operates six Republic trucks and no horses. The first Republic proved so efficient that a few months later another was added—and now, with six Republics and no horses whatever, the company finds it is doing more business than at any time in its history, with less cost and greater speed.

Despite the fact that more snow falls in Idaho Falls than anywhere within a radius of several hundred miles, and with extremely poor road conditions, these six Republics are on the job continuously the year around. As a result of the service obtained by the company 87 Republic trucks have been sold to other concerns in Idaho Falls and vicinity during past year.

MILWAUKEE DEALERS MAKE PLANS FOR BIG TOUR.

The Milwaukee Automobile Dealers' Association is planning to hold a sociability and trade promotion tour in June, to cover 800 miles of the most thickly populated territory in Wisconsin. Before the war the association conducted annual tours, having as its purpose the promotion of the annual fall show held in connection with the Wisconsin State Fair in Milwaukee.



Four of the Fleet of Six Trucks in the Service of the Idaho Falls Transfer and Storage Co., Idaho Falls, Ida., That Replace 50 Horses.

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G. M. C. STOCK LISTED ON NEW YORK EXCHANGE.

The General Motors Corporation in making application to list $50,740,800 six per cent. cumulative debenture stock and $68,742,300 common stock, presented the most voluminous report ever submitted to the Stock List Committee of the New York Stock Exchange. The report covers 27 pages. The committee acted favorably upon the application.

The unusual size of the General Motors Corporation report was taken to indicate the many ramifications of the company's interests. It shows that $20,000,000 par value of the debenture stock is to be set aside immediately for exchange of outstanding preferred stock on the basis of share for share, subject to such rules and regulations as may be prescribed by the board of directors.

The balance remaining unexchanged after Jan. 2, 1921, together with the whole or any part of said preferred stock so exchanged, may be issued by the board of directors as prescribed by law.

NORTHERN FOUNDRY CO. INCREASES ITS CAPITAL.

The Northern Foundry Co., Marinette, Wis., has increased its capital stock from $25,000 to $95,000. The company was organized a year ago to specialize in gray iron castings for the automotive industry. Enlargements are being made which will double the capacity. The company has also taken over the plant of the Landover Motor Truck Co., Marinette, and this concern has taken new quarters. The Northern company at its annual meeting elected the following officers: President and general manager, J. M. Fitzpatrick; vice president, Patrick McManus, Milwaukee; secretary, Edward J. Vanderboom, Milwaukee; treasurer, Louis E. Best, Milwaukee.

TROESCH IS EXPORT MANAGER.

The American Rubber and Tire Co., Akron, O., has engaged F. C. H. Troesch as export manager. Mr. Troesch was formerly in the export department of the Firestone Tire and Rubber Co. The American Rubber and Tire Co. has had an extensive foreign business for years in all parts of the world, and, with Mr. Roesch at the head of the export department, it expects to expand in this field very materially. The company's products include the American-Akron tires and tubes, the Double Wing blow-out patches, tire plasters, reliners and five-minute cure vulcanizing cement.

NO CHANGE IN REO PRICES FOR SIX MONTHS.

The Reo Motor Car Co. guarantees the present prices of all models until July 1. These prices have been in effect for some months and are as follows: Five-passenger touring car, $1395; three-passenger roadster, $1395; three-four-passenger coupe, $2175; five-passenger sedan, $2175; speed wagon chassis, $1250.

Training Wounded Soldiers Motor Mechanics

At Fort McHenry, Md., where the United States operates a large reconstruction hospital, one of the trades taught to convalescent soldiers is automobile mechanics. A one-armed or a one-legged automobile mechanic will not be a new thing under the sun once the general public has been committed to the principles of re-education.

Motor mechanics has proved a most popular subject of instruction for crippled soldiers. In the Canadian schools for disabled soldiers the trade has proved so popular that the great majority of the men prefer it. Canada, England, Germany and India are among the belligerents that offer training courses in motor mechanics.

In British Columbia gasoline engine classes were organized soon after the wounded began returning from overseas. Vancouver, Victoria, Esquimault and Westhaven provide instruction in motor mechanics. In Victoria the Military Hospitals Commission and the Board of Education together operate a fully equipped motor repair shop in which men who wish to become chauffeurs are taught.

Men trained in this course conduct well patronized jitney stand in the town. Those who wish a thorough course preparing them as motor mechanics are sent to Vancouver, and later to the new workshops at Esquimault and Westhaven. Several men from other parts of British Columbia are kept in Vancouver on a maintenance allowance while receiving training.

There is a big field for workmen in this trade in Saskatchewan, and thorough courses are given for war cripples by the University of Saskatchewan. Another course is at the Provincial Institute of Technology and Art at Calgary. Disabled men so trained compete successfully with the average sound mechanic.

While the wounds of English soldiers and sailors are healing at Queen Mary's Convalescent Hospital at Brighton and Roehampton, the men are afforded the opportunity of learning motor mechanics. The workshop at Roehampton is fitted up as a model garage in charge of disabled men who, besides being skilled instructors, understand the special problem of the war cripple.

In far-off India the trade of automobile mechanics takes hold of the natives who were crippled in the war. Germany, too, has training courses for war cripples who take up motor mechanics.

The accompanying illustration shows disabled American soldiers learning automobile and motorcycle repairing at the Reconstruction Hospital at Fort McHenry. These men have taken hold of their new work with wonderful enthusiasm and there is no doubt that they will be enabled to make a good living at their adopted trade, despite their physical handicaps.

WILL SPECIALIZE IN STEERING WHEELS.

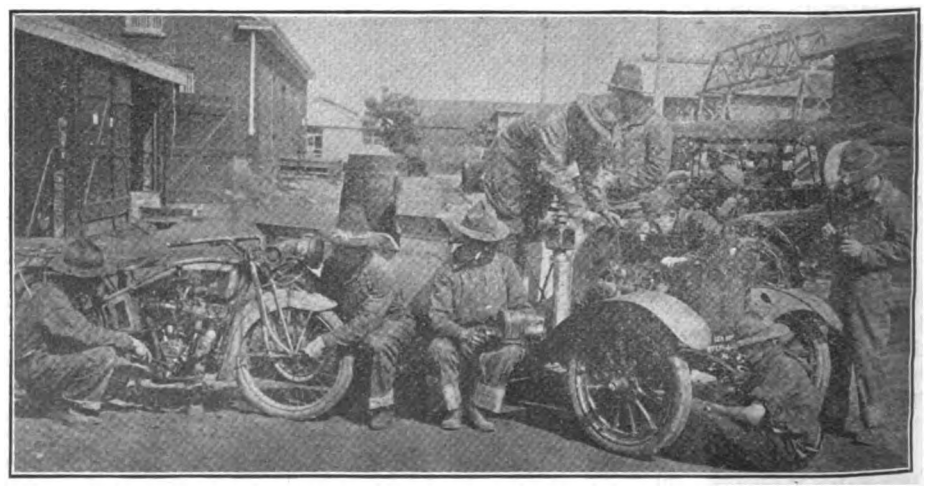
The Allerding Products Co., with a capital stock of $50,000, has been formed in Mansfield, O., to specialize in the production of steering wheels and wood rims for aircraft and other purposes. The directors are: C. N. Allerding, E. S. Walter and John H. Coss of Mansfield; Charles S. Munson, Detroit; James Israel, Mt. Vernon, N. Y.; Fred R. Jones, Cleveland, and C. F. Allerding, Mt. Vernon. C. N. Allerding heads the company. Other officers being: Vice president, Charles S. Munson; secretary-treasurer, E. S. Walter.

THE INDUSTRY'S WAR TAX.

Manufacturers of automobiles paid the United States government $23,981,363.35 for the year ended June 30, 1918, under the three per cent. revenue tax. The State of Michigan paid $14,711,373.33, or more than 60 per cent. of that amount.

FREE SALE OF GASOLINE IN FRANCE.

France has removed the ban on the free sale and use of petroleum. The decrease also permits the free sale and use of automobiles and except those not licensed for commercial purposes.

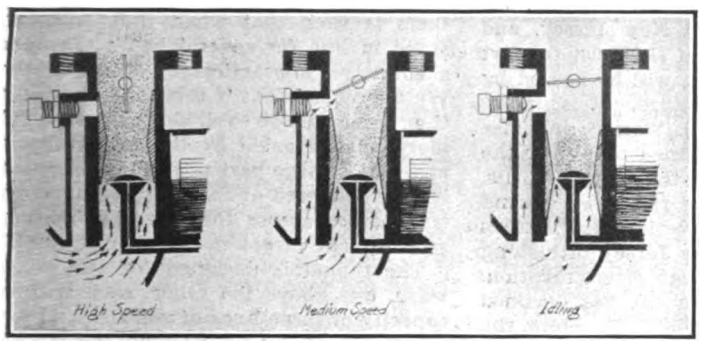


Group of Soldiers, Physically Impaired from Wounds, Being Trained in Motor Mechanics at the Reconstruction Hospital at Fort McHenry, Md.

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SUNDERMAN "NITRO" CARBURETOR

A PRINCIPLE of compensation in carburetion that is claimed to be entirely new and to afford greater efficiency with the use of fuel oils is represented in the design of the new Sunderman carburetor, which is given the trade name of "Nitro" and is now being produced commercially by the Sunderman Corporation, Newburgh, N. Y., a concern that has manufactured various types of carburetors for gasoline and kerosene and which developed it with great care before beginning production.



The "Floating Venturi" Tube of the "Nitro" Carburetor at Different Heights: From Left to Right, High, Medium and Idling Engine Speeds. The By-Pass Is Closed in the First, Partly Open in the Second and Fully Open in the Third.

It is an automatic float feed type having a chamber into which the fuel is admitted in the usual manner by a needle valve that is adjustable to obtain the desired flow, the level being established by the setting of the float. From the base of this chamber there is an outlet, this being a plain tube that extends into the center of the air passage. At the end of this tube and at right angle to it is a single fuel nozzle in the form of a mushroom that has the head at the usual height with relation to the fuel level in the chamber.

As will be noted from the accompanying illustration the air passage is curved to the level of the base of the float chamber, and then it is vertical. Just below the flange by which the carburetor is attached to the intake manifold of the engine is a butterfly valve that is variable 90 degrees from fully closed to fully open. At the bottom of this vertical section is a collar or sleeve that is a seat for the "floating venturi," which is a sleeve that is constricted in the center section, which is so placed that the smallest diameter is at the greatest diameter of the mushroom shaped fuel nozzle.

Feature of the "Floating Venturi."

The "floating" feature of the venturi tube is that at low velocity of air through the intake the movable sleeve rests on the collar at the base of the vertical section, but as the velocity increases the force lifts the slidable tube above the fuel nozzle in ratio to the velocity until it reaches the highest point. But as the fuel consumed when the engine is idling comes from the same nozzle that supplies it when there is maximum demand a by-pass is relied upon to reduce the suction on the fuel nozzle at low speeds.

The operation of the by-pass and the "floating venturi" is shown in the group of three drawings of a cross section of the intake of the carburetor. This by-pass is a duct in the casting that rises vertically and then extends horizontally into the intake at a point approximately midway between the top of the floating sleeve and the axis of the butterfly valve. At the top of the vertical section of the duct and in line with the horizontal section is an adjusting screw, which may be seated so that the velocity of the air through the by-pass may be adjusted to meet the requirements. This is the only adjustment of the carburetor.

Tube Floats on Air Current.

As the fuel demand of the engine is increased and the suction is greater than the weight of the "floating venturi," the venturi tube is lifted by the stream of air, which opens or increases the area of the air passage around the fuel nozzle, compensating for correct ratios of air and fuel. As will be noted, as the demand increases the venturi is lifted so that it reduces the opening of the by-pass and eventually closes it, so that when there is maximum suction there is a minimum area around the fuel nozzle, decreasing the proportion of fuel to air and affording full volumetric efficiency. As the speed of the engine is lessened the weight of the "floating venturi" causes it to fall to whatever point it may "float" until it becomes fully seated.

As will be noted the "floating venturi" is a stream lined air passage that is tapered to a narrow throat at the largest diameter of the fuel nozzle, and this is a loose fit, so that it is free to move upward. The air passage between the nozzle and tube is small, so that there is considerable lifting force exerted by the suction of the engine, and the tube is automatically centered over the nozzle. The tube rises very slowly until the by-pass opening is closed, and then it rises very fast. Statement is made that at its highest point, where it rides the air stream, it does not restrict the air because of the stream line taper. It is said to be sensitive to a very fine degree.

Jet Drilled for Each Engine.

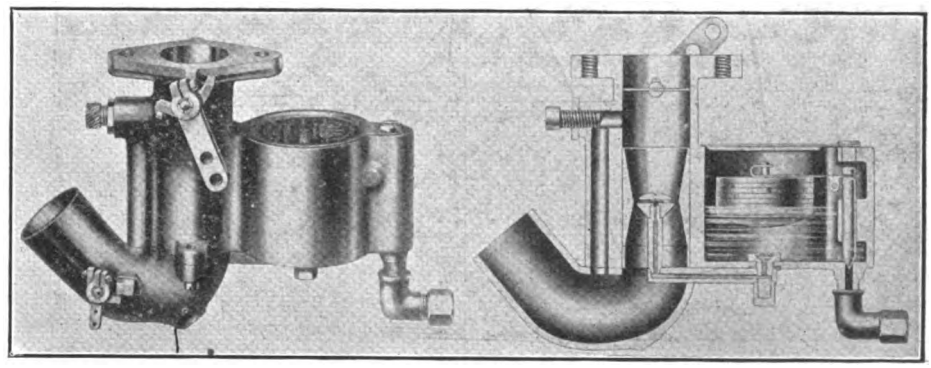
The jet tube on which is fitted the mush room head contains the calibrated jet, which is drilled for the particular requirements of the engine upon which the carburetor is installed. This jet feeds into the mushroom head and out through four small holes, spreading the fuel by capillary action in a thin fan film to all sides of the under surface of the slot. The fuel is taken up by the ascending air in a very fine vapor. The nozzle is claimed to atomize the fuel and effectually break it up. The vapor is carried through the venturi tube without cross currents, eddies or precipitation. The carburetor is claimed to be as efficient with heavy fuels and kerosene has been used with decided success.

Used on a six-cylinder car and burning gasoline for fuel 26.71 miles were made at a speed of 10 miles on a gallon, 27.60 miles at 20 miles an hour and 27.98 at 30 miles; burning kerosene 37.70 miles were made at 10 miles an hour, 34.17 miles at 20 miles an hour and 28 miles at 30 miles an hour. No adjustments of carburetor were made between the tests of the two fuels. The car was not in condition to obtain the greatest fuel economy with reference to miles a gallon, but the relative fuel efficiency was probably well established.

The carburetor has not been demonstrated with a view of determining its efficiency to tractors, but claim is made that it would afford extremely good results. One will note that with the passenger car with which the tests stated were made there was greater mileage made with kerosene, especially at low speeds, than with gasoline, and if this ratio can be obtained with tractors the results would be extremely favorable for kerosene, especially when the price of kerosene is so much less than gasoline.

TO DEAL IN TRACTORS.

A charter has been filed in Delaware for the Sterling Spring Co. to deal in automotive tractors by C. L. Rimlinger, M. M. Glancy and P. B. Drew, Wilmington, with capital of $150,000.



The Sunderman "Nitro" Carburetor, Complete Assembly and Cross Section. The "Floating Venturi Tube" Is Shown Seated and the By-Pass Full Open in the Cross Section. The Mushroom Head of the Fuel Jet Almost Fills Vertical Intake Passage.

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APPROPRIATION BILL ENDS MOTOR TRANSPORT CORPS.

The army appropriation bill provides for the repeal of the Overman act, under which the Motor Transport Corps, Tank Corps and Aviation Corps, were created for the emergency, and abolishes the Motor Transport Corps and Tank Corps completely. Aviation departments, both military and production, are recommended for continuation.

The bill provides for the purchase, operation and maintenance of motor trucks and other motor vehicles by each individual army corps, and thereby reverts back to that position prior to the war. Under the pre-war status the motor transport was not pooled and each corps, such as the Quartermaster Corps, Ordnance, Engineers, etc., bought different types and sizes of vehicles.

HERSCHELL-SPILLMAN CO. HAS REORGANIZATION.

Under the laws of Massachusetts, and with $1,750,000 capitalization, the Herschell-Spillman Co., North Tonawanda, N. Y., has been reincorporated and has taken over all the assets and property of the old company. The plant and production will be increased. Officers of the new company are: President and general manager, B. W. Birdsall; vice president and chief engineer, E. O. Spillman; treasurer, Thomas C. Perkins; assistant treasurer and secretary, M. J. Tovell. The directors are T. J. Wilson, chairman; E. O. Spillman, Guy White, F. R. Switzer, Thomas C. Perkins and B. W. Birdsall.

"THE BIRTH OF A WHEEL."

"The Birth of a Wheel" is the title of an interesting booklet published by the Clark Equipment Co., Buchanan, Mich., manufacturer of disc steel wheels and internal gear axles. It shows photographically the successive steps in the evolution of a disc steel wheel. Copies will be mailed on request to the company.

Hudson River Truck Traffic Tunnel Is Up to States

For the first time in many years there appears to be assurance that bills for the authorization of a vehicular tunnel between New York and New Jersey, and for the appropriation of $1,000,000 to start the $12,000,000 project, will be passed by the New York Legislature. It is understood that Gov. Smith warmly indorses the plan, and is concerned only over the problem of providing the money. This, likely, will have to be raised by a bond issue of $6,000,000 covering New York's share of the cost, New Jersey furnishing an equal amount through direct taxation.

The Federal government has declined to help finance the tunnel. Therefore, the two states concerned will, it is now expected, go ahead with the big job on their own account. At a cost of $12,600,000 (the $600,000 being for acquirement of real estate at both ends) a double-deck vehicular tube will be constructed under the North river between 12th and Provost streets in Jersey City and Canal and Varick streets in Manhattan.

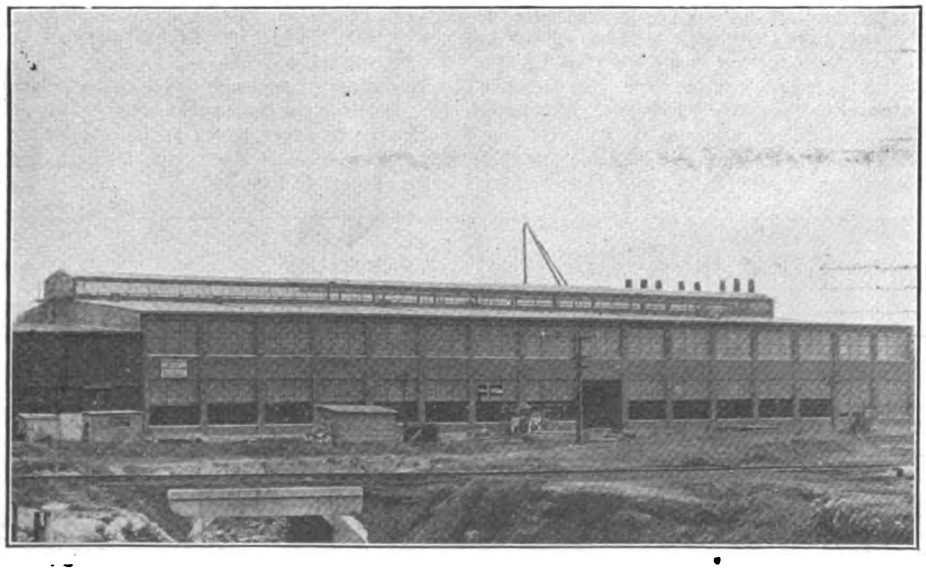
Major-General George W. Goethals reports that the work can be completed in two years, at the end of which time the tunnel will be ready to accommodate 4000 vehicles in each direction daily, or a total of 1,300,000 every year. With tolls fixed at 30 cents on the New York side, traffic would produce in 20 years $12,895,711, which added to $500,000 to be derived from conduit rights, rentals and privileges, would give a total revenue of $13,395,711.

E. W. Bloomingdale, chairman of the New York State Bridge and Tunnel Commission, points out that the tunnel would be a big boost to the motor truck industry.

"The conditions in the city of New York," he said, "are now such that the delivery and receipt of freight at the railroad terminals along the river front involve delay all the way from several hours to a day and a half. There have been cases in New York that we personally know of where a truck has stood in line for a day and a half in order to discharge its freight.

"A consequence is that a great many concerns are unable to use motor trucks because the overhead cost of operating them is such that when they have to stand in line for several hours they are absolutely impracticable economically. We apprehend that if this tunnel is built the horse drawn vehicle will be still more pushed aside by the motor truck, and that a large part of the traffic which is now delivered at the water front to be transported across the river by lighters will be sent direct through the tunnel."

The tunnel is designed for two roadways, one above the other, each with a capacity of three lines of vehicles and for one sidewalk for pedestrians; also with suitable pavements and adequate lighting and ventilation.



Erecting a Steel and Concrete Two-Story Structure Over a One-Story Wooden Building at the Plant of the Sheldon Axle and Spring Co., Wilkes-Barre, Pa., Which Will Add 80,000 Square Feet of Floor Space for Manufacturing.

LARGE ADDITION TO SHELDON AXLE PLANT.

A very large addition is being made to the plant of the Sheldon Axle and Spring Co., at Wilkes-Barre, Pa., which will, when completed, increase the floor space approximately 80,000 square feet, and this will make possible an increase of production of about 40 per cent. This space is badly needed, for the company has been very greatly handicapped by manufacturing facilities, which have been inadequate. The demand for Sheldon axles has been much greater than the works could produce and to meet this the addition is being made.

The construction of the building is something out of the ordinary in that it is being erected over an old wood structure, a part of which is two stories. As the work advances the wooden building will be demolished. In the accompanying illustration the original structure will be seen at the left of the new, and when the new steel and concrete building is completed it will entirely cover the old unit. This plan of erection was necessary because of the limitations of ground area, there not being space available for the usual manner of construction.

NAPOLEON TRUCK CO. SEEKS $100,000.

The Napoleon Motors Co., Traverse City, Mich., maker of Napoleon passenger cars and trucks, is trying to raise $100,000. Business men of the city are helping. Officers of the company say that plenty of business is to be had.

U. S. RUBBER TO RETIRE BONDS.

The United States Rubber Co., New York, through the Central Trust Co., New York, offers to retire $690,000 of its issue of first and refunding mortgage gold bonds due Jan. 1, 1947, the offer being to pay 105 per cent. of their face value.

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HOW TO PUT ON PNEUMATIC TRUCK TIRES.

G. E. Brunner, manager of the service department of the Goodyear Tire and Rubber Co., Akron, O., says of the application of pneumatic tires on trucks:

"In the main the general method of applying tires on passenger cars is applicable when fitting the larger sizes on trucks. There are, however, some exceptions, which are worth noting.

"In mounting a passenger car tire it is customary to first insert the tube in the valve stem hole of the rim, then to pry the tire over the rim. Now with the pneumatic truck tire this method cannot be followed owing to the stiffness of the beads and the width of the rim. So you first lay the tire squarely on the rim with the valve stem directly over the hole in the rim.

"Then allow the tire to drop down evenly, pressing the valve stem down sideways and toward the end of the flap. Hold the valve stem in this position with a thin steel bar. When the tire is completely on the rim it can be readily turned from one side to the other until the valve stem appears at the hole and can be pulled through. Then the side ring is ready to be slipped into place all around the tire, after which the locking ring will fit into its channel, holding the tire securely.

"The tire is now ready for inflation. Remember under-inflation ruins tires—so avoid this risk. Never run a tire flat or very much deflated—it means ruin. Also guard against overloading. Truck tires represent an investment of capital and careless use of them is simply throwing away money. And this does not square with present day principles of business economy.

"We have just recently issued a booklet bearing the title, 'How to Apply Pneumatic Cord Truck Tires,' which outlines in detail each step in the operation of mounting these tires. It also contains a truck tire load and tire inflation pressure table and a few timely hints on the care of tires.

"These booklets are for general distribution among truck owners and may be had at Goodyear truck tire service stations throughout the country, or upon application to the main office of the Goodyear Tire and Rubber Co. at Akron, O."

WILLIAMS SALES MANAGER FOR GRANT TRUCK.

Birkett L. Williams has become sales manager of the truck department of the Grant Motor Car Corporation, Cleveland, O. He has a comprehensive knowledge of truck merchandising gained through a large experience in both the domestic and foreign fields.

MAY BUILD RADIATOR PLANT.

Erection of a radiator manufacturing plant in Cleveland is being considered by the Sparks-Withington Co., Jackson, Mich. The company makes Sparton horns, fans and vacuum tanks.

Motor Trucks Great Factor Winning World's War

Relating what the motor truck has done in the war, George M. Graham, chairman of the National Motor Truck Committee of the National Automobile Chamber of Commerce, points out that the total number of trucks exported to the entente countries for the four years of the war was 53,173, of an aggregate wholesale value of $152,669,988. He says:

"It is evident that nearly all of these were bought on order of the allied governments for military use, since the imports of these countries from the United States during the two fiscal years preceding the war aggregated only 400 trucks, valued at $324,309, and also because England and France prohibited the importation of motor vehicles for civilian use. During the war there was also a notable increase of shipments of trucks to Canada, Scotland, Greece, Japan, Australia, New Zealand and British India, and while this increase was due in large part to the inability of England, France and Italy to export trucks to these countries, there is no doubt that some of the trucks exported to them from this country found their way into the war area, while many more were used directly and indirectly in war work in the countries to which they were shipped.



George M. Graham, Chairman, N. A. C. C. National Motor Truck Committee.

From the time the United States entered the conflict—April 6, 1917—to the cessation of hostilities Nov. 11, 1918, the War and Navy Departments placed contracts and orders for 204,760 motor trucks, of which 90,727 had been produced to Dec. 1, 1918, and 36,227 were still due on orders that had not been cancelled. A statement by the statistics branch of the general staff shows that by Nov. 11 there had been produced on War Department contracts a total of 83,330 motor trucks, including 55,563 two-wheel drive trucks, 16,934 four-wheel drive trucks and 10,893 ambulances. Of these there had been shipped overseas 30,417 two-wheel drive and 9420 four-wheel drive trucks and 6981 ambulances. Or a total of 46,818. A considerable number have been shipped overseas since the middle of November.

In the neighborhood of 9000 or 10,000 trucks are in use by the military establishment in this country, at camps, cantonments, forts and so on.

What the motor truck industry undertook and actually accomplished for the army will be better understood and appreciated when it is recalled that the whole production of commercial motor vehicles in 1914—the last ante-bellum year—was reported by the Bureau of the Census as only 25,375, valued at $45,098,464, or less than half the production of war trucks alone during the year just closed—56,410.

But trucks for the army and navy were not the only contribution of the industry to war activities. In addition to the military trucks there were produced last year 162,646 commercial vehicles for essential civilian use, the majority required by plants engaged on war orders; by farmers, commission merchants, wholesale grocers and others for hauling farm produce and manufactured goods; by textile mills and clothing factories; by contractors and innumerable other industrial and commercial enterprises necessary to successful conduct of the war or welfare of the people.

Thus, in four years the industry increased its output eight fold to meet the demands of war time activities of the nation. It is impossible to place any estimate on the value of this contribution to the winning of the war. From every quarter came demands to speed up production of foodstuffs, munitions, clothing and the thousand and one necessaries of military and naval operations and civilian support, health and comfort. At the same time the man power of the country was greatly depleted through the draft, suspension of immigration and the exodus of many thousand naturalized citizens and aliens to fight for the countries of their birth. To a considerable extent the employment of motor trucks compensated for this loss of man power and relieved the railroads of the congestion of freight along their lines and at terminals, which became highly critical last winter.

REPRESENTED CONTINENTAL MOTORS CORPORATION.

George W. Yeoman, treasurer, and John G. Painter, sales manager of the Continental Motors Corporation, attended the New York show. The company did not have an exhibit at either the New York or Chicago show this year.

A six per cent. dividend has been declared by the Service Motor Truck Co., Wabash, Ind., payable to stockholders of record Dec. 31, and making a total of 15 per cent. for last year.

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INTER-CITY FREIGHT SERVICE

Walter Apgar & Co., Philadelphia, Specialize Contract Haulage, Operate a Large Garage and Do Insurance Brokerage, Each a Separate Department—Originate with General Trucking

SPECIALIZING three different businesses, instead of concentrating on one, has been undertaken with a very large measure of success by Walter Apgar & Co., 22nd and Arch streets, Philadelphia, and 80 Cortland street, New York City, a result that is due to the energy, experience and resourcefulness of the executive of the concern. Two of these are related—that is, the company engages in general trucking, moving furniture, expressing, long distance hauling and haulage contracting, and operates a public garage in which its vehicle equipment is housed and maintained, but the third—general insurance—is usually regarded as being separate or apart from either of these. The company operates these departments independent of each other, but of course there is cooperation between them for the promotion of the Apgar interests.

Walter Apgar, head of the business, and who is a notary, helping as he jocosely says, "to feed the other departments in this way," is a pioneer in intercity trucking in Philadelphia. He founded the business of Apgar & Edgerton, which was at 217 North 22nd street, in that city. He had a contract with the Collins & Aikman Co., plush manufacturers of New York and Philadelphia, to make deliveries and collections, sometimes making several trips daily between the two cities with a small equipment of trucks. A garage fire necessitated the installation of entirely new equipment.

Having to make frequently trips in the contract work between Philadelphia and New York was the basis of the business and it afforded experience that led to establishing a regular intercity haulage service, although Mr. Apgar was familiar with most of the phases of general motor transportation.

Last summer the Apgar & Co. served the United States government at May's Landing, N. J., using seven stake body trucks in general service for the Bethlehem Loading Co. Fifty thousand dollars worth of insurance was carried on the government goods and $20,000 on each truck in operation. All this was long distance contract work. The company also was engaged in road work, penetrating to a point as far south as 80 miles below Richmond, Va. On the other hand, runs on special work were made to points as far East as Boston and Bridgeport, Conn.

Walter Apgar & Co.'s new fleet (actually is owned by the company), consists of four Peerless trucks and three Brockways. Of the former, two are covered vans that can be locked securely, of five tons capacity, equipped with roomy cabs for the drivers and helpers, the front and sides being partly glass enclosed and the glass being shock resisting. Full shelter from storm and wind is afforded. The other two Peerless trucks are also five tons capacity, but the bodies are platform with crate sides. These also can be covered with tarpaulins and made virtually as storm proof as the covered top vans. Occasionally one of the large vans, when inter-city hauling does not require the use of all large machines, is worked for the local expressing. The vans are 16 feet long, seven wide and seven high, with rear doors four feet wide.

Two 3½-ton Brockways are equipped with platform stake bodies and the two two-ton Brockways, of similar type, are used both for expressing and contract hauling.

The two-ton Brockways, or usually one of them, are used for pick up work.

In addition the company can assemble for any work 50 trucks, by special arrangement with the owners. Among these are dump body and stake body cars, some furnished with hydraulic hoist and others with power winch. Sometimes from 15 to 20 trucks a day are employed on contract work by the company.

The inter-city service trucks are equipped with governors set for 15 miles an hour and there is a penalty of instant dismissal for any employee found tampering with these governors. It is preferred, when business warrants, for two of the big cars to leave Philadelphia and New York together. A driver and one helper accompanying each. When one of the big trucks is used in local expressing, however, only one man, the chauffeur, is sent.



Peerless Five-Ton Truck Chassis with Enclosed Cab and Van Body, a Type of Equipment Used for Long Distance Haulage by Walter Apgar & Co., Philadelphia, Pa.

Day Work Is Preferable.

While some night trips are made just at present, because of business necessitating this service, Mr. Apgar much prefers daylight work, as it is his opinion fewer accidents happen when there is good light.

The trucks running to New York from Philadelphia now start at midnight on the night schedule and as near 9 a. m. as possible on the daylight schedule. Usually when daylight return trips are made the trucks leave New York about 5 a. m., unless it is necessary that the load be put on at a store or factory which does not open until later than that hour. The plan, of course, is to make collections and deliveries while business places are open and to afford ample time for methodical and efficient work.

If there is one thing the Apgar company will not endure, it is inefficiency. Thus it is, while many other inter-city concerns are having bad driving accidents, the Apgar trucks have comparatively few mishaps, because the drivers are taken from a selected list, Mr. Apgar's acquaintance among truckmen and drivers making this possible.

The Apgar concern probably was the first inter-city trucking company to be driven the shortest mileage from Philadelphia to New York, by going via Perth Amboy to Staten Island, thence to St. George and ferrying over, instead of the usual Newark-Elizabeth-Jersey City and ferry route. The former route saves five miles driving, but it has one pitfall for the uninitiated: The ferry stops between 1:30 and 5 in the morning and where night trips are made, this may cause delay, although the distance is less.

Central Station in New York.

Walter Apgar & Co.'s New York office and receiving station, only very recently established to meet the growing needs of the business, is in charge of William Crater. He also arranges for return loads from the East. The location is 80 Cortlandt street, in the heart of the shipping center, which has proven a great con-

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venience. There is no loading platform yet, but the storage space is ample, as is the case in Philadelphia.

In the matter of insurance, the Apgar company is fortunate, Mr. Apgar being, as already stated, in that business himself. Insurance is carried against fire, damage to goods in transit and theft—although, Mr. Apgar regrets, in common with other Philadelphia-New York hauling concerns, insurance is not given against pilfering—that is the loss by theft of small items of merchandise from a large package of goods. Insurance companies hold there is so much of it that they will not cover it.

As to rates, the company usually charges from 75 cents to 90 cents per 100 pounds by the load for long distance work, except that the haul to New York brings $1 a 100 pounds. Hauling to Newark and other nearby Jersey points 75 cents the 100. However, there are charges according to conditions out of the ordinary. For small quantities hauled to New York there is a charge of $1.15 the 100. Ninety cents a hundred is the usual local rate, although for especially trying conditions a higher charge may be made.

The run to New York requires from nine to 10 hours, and while faster time may be made, if desirable, this speed is regarded as the safest.

While the company has its own garage, used also as a public garage, of course it has the benefit of the Peerless and the Brockway service on the necessary repairs to its own fleet.

Overhead Costs Apply Individually.

Mr. Apgar, like many other motor trucking concerns, considers overhead a personal matter and deems that it varies widely; that in virtually every business it differs for each individual or firm, and, therefore, a statement of operating costs, including overhead for one concern, is of little or no value in another that may be considering the use of the same type and make of trucks in a similar business. For instance, few other concerns combine as many classes of motor trucking as the Apgar company and the overhead of this concern, therefore, would be meaningless to another business not situated and equipped in exactly the same circumstances.

The Cost of Operating.

The estimated cost of operating a five-ton Peerless truck 300 days of the year is given as follows, it being noted that interest on investment is taken at only half of the cost, since while earning interest the investment is being written off and charged to truck operation as depreciation:

Chassis price	$4,700.00
Body price (estimated)	550.00
	$5,250.00

Fixed Charges.

Interest on half of investment, 6%	$157.50
Depreciation 20% (less tires)	926.00
Driver's wages (300 days) $4	1,200.00
Garage charges, $30 a month	360.00
Insurance	400.00
Painting	75.00
Total per year	$3,118.50
Total per day	$10.39

Variable Charges Per Mile.

Tires (7000-mile guarantee)	$0.0885
Gasoline, 26c per gallon	0.0650
Oil, 60c per gallon	0.0060
Grease and waste	0.0250
Total	$0.1845
Tire equipment (estimated)	$620.00

	Miles Per Day.					
	20	30	40	50	70	80
Fixed charges	$0.5195	$0.3130	$0.2597	$0.2078	$0.1484	$0.1298
Variable charges	0.1845	0.1845	0.1845	0.1845	0.1845	0.1845
Maintenance	0.0350	0.0350	0.0350	0.0350	0.0350	0.0350
Total per mile	0.7390	0.5325	0.4792	0.4223	0.3619	0.3593
Total per ton mile	0.1478	0.1065	0.0958	0.0844	0.0724	0.0718
Total per day	$14.78	$15.98	$19.17	$21.12	$25.33	$26.74

The maintenance item may be considered made up mainly of renewals due to wear and breakage and labor charges.

The operating costs for a Brockway of 3½ tons capacity are given as follows, these figures being based, however, on operating every day in the year:

Fixed Charges Per Day.

Twenty per cent. depreciation on $3750 chassis, less price of tires (figured separately, per day)	$1.90
Interest on investment at 6% per day	.62
Insurance	.55
Driver's wages	3.00
Garage	.40
Total fixed charges per day	$6.47

Variable Charges Per Mile.

Gasoline, 6 miles per gallon, 28c	$ .046
Oil, 100 miles, 40c per gallon	.004
Tires, based on retail price guarantee, 7000 miles	.025
Maintenance and overhauling per mile	.012
Total fixed charges per mile	$ .087

	Total Cost Per Day for Mileages.						
Daily mileage.. 20	30	40	50	60	70	80	90
Daily charges..$6.47	$6.47	$6.47	$6.47	$6.47	$6.47	$6.47	$6.47
Mileage charges 1.74	2.61	3.48	4.35	5.22	6.09	6.96	7.83
Total cost....$8.21	$9.08	$9.95	$10.82	$11.69	$12.56	$13.42	$14.30

All Departments Under One Roof.

The Apgar company, of course, conducts its haulage insurance and garage departments separately. The garage business is conducted under the name of Apgar & Miller, Mr. Miller being Mr. Apgar's partner also in the haulage department. All the departments are under the same roof. The garage is used mainly by storage houses, contractors, etc., some of whom are engaged in contract haulage, and by private owners of machines of various kinds.

Many trucks engaged in government work also are stored in the garage over night and holidays and Sundays when not in operation. Trucks operating between Philadelphia and Camp Dix are handled there, as are many of the Du Pont company's vehicles. Furniture vans also use the Apgar & Miller garage to a large extent, the entire fleet of one large concern being stored there when not in use.

It is the intention of Walter Apgar & Co. to add large trucks from time to time and where construction will permit cabs will be placed on them, as already has been done with the large vans.

Daily space is taken in the various Philadelphia newspapers, as the company strongly believes in the value of advertising.

The automobile show in St. Joseph, Mo., will be held March 19-22 at the Auditorium, John Albus is manager.

CHANGES MADE IN ACME TRUCK ORGANIZATION.

H. L. Brown has become factory representative for the Acme Motor Truck Co., Cadillac, Mich., in Colorado, Wyoming, New Mexico and Utah. He was for several years with the Service Motor Car Co.

J. E. Bowles is to be transferred from special representative in the western states to the Pacific coast, with headquarters in San Francisco.

George P. Gould becomes factory representative in Massachusetts, Vermont, New Hampshire and Maine.

THREE HUNDRED EXHIBITS FOR KANSAS CITY SHOW.

With 300 exhibits, 50 more than last year assured, the Kansas City motor show, Feb. 24-March 1, has every promise of great success. Two hundred cars and trucks are included in the exhibits. Two full balconies were built in Convention Hall to accommodate the increased displays. The demand for space was so great that few exhibitors secured more than a single space. Prospects for a most prosperous year for the Kansas City dealers are very bright.

WILL MAKE SURVEY OF SOUTH AMERICAN MARKET.

C. J. P. Lucas, Chicago, who for the last eight years has been connected with the Automobile Trade Journal, will leave in April for South America, to make a survey of the South American market with a view of establishing a house in Buenos Aires for representing an American car, truck and tractor and lines of supplies.

SCHEU NOW SALES MANAGER.

E. A. Scheu has been promoted from eastern sales manager to general sales manager of the King Motor Car Co., Detroit, and will have headquarters in the Detroit factory.

FEW AMERICAN EXHIBITS AT LYONS SAMPLES FAIR.

Eighty-three automobiles and accessory manufacturers will exhibit at the Lyons samples fair in France in March. There will be little American representation. Goodrich and the United States Rubber Co. and the French agent of Overland will exhibit.

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N. A. C. A. ANNUAL HAND BOOK OF AUTOS.

The National Automobile Chamber of Commerce, New York City, has issued its 16th Annual Hand Book of Automobiles. In this book are shown detailed and uniform specifications of the principal models of motor cars and motor trucks produced by the leading manufacturers in the United States, who are members of the National Automobile Chamber of Commerce.

The gasoline passenger car section shows 110 models and illustrations, while the gasoline truck section includes 70 models and illustrations; there are four models in the electric vehicle section.

The hand book of the American industry has become the standard reference book for prices and specifications of new models among domestic and foreign dealers, export houses, American consuls, secretaries of state, libraries, dealers' associations, automobile and country clubs, etc. The specifications are in tabular form and follow a uniform arrangement for ready reference and comparison. Copies of the hand book of 205 pages are supplied to dealers and the public at the nominal price of 25 cents to cover the cost of printing and mailing.

JOINS OHIO NASH CO.

A. E. Creeger, who has been identified with the Nash Motors Co. of Kenosha, Wis., since its organization, as special traveling representative, has resigned to become associated with the Ohio Nash Co. and will assume full charge of truck sales for that important territory.

CAMPBELL-EWALD CO. MOVES.

The Campbell-Ewald Co. has moved from 117 Fort street, West, Detroit, to new and larger quarters on the eighth floor of the Marquette building, at Wayne and Congress streets.

Tire Manufacturers United in Trade Organization

The annual meetings of divisions of the Rubber Association of America were held in New York in connection with the annual meeting and "Victory Banquet" of the association.

The Pneumatic Tire Division met at the Hotel McAlpin. A roll call of all American tire manufacturers, whether or not members of the rubber association, showed that the 105 men present represented 60 different tire manufacturers.

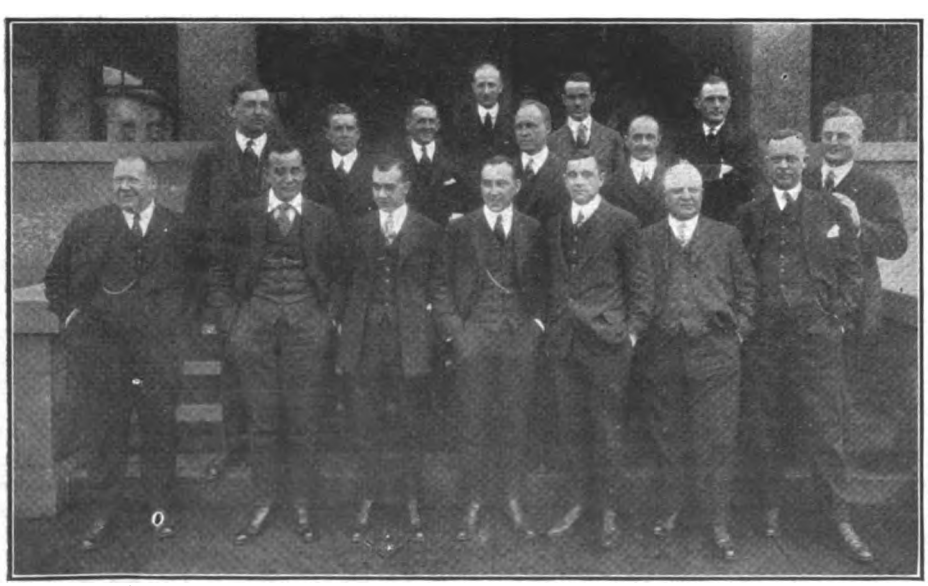
G. M. Stadelman, vice president of the Goodyear Tire and Rubber Co., Akron, O., was elected chairman, and E. H. Broadwell, vice president of the Fisk Rubber Co., Chicopee Falls, Mass., was chosen vice chairman. It was decided to have an executive committee composed of representatives to be appointed by the following concerns:

Kelly-Springfield Tire Co., New York City; Empire Tire and Rubber Co., Trenton, N. Y.; Hood Tire Co., Watertown, Mass.; Miller Rubber Co., Akron, O.; Portage Rubber Co., Barberton, O.; Firestone Tire and Rubber Co., Akron, O.; General Tire and Rubber Co., Akron, O.; Ajax Rubber Co., New York City; The B. F. Goodrich Co., Akron, O.; Pennsylvania Rubber Co., Jeannette, Pa.; United States Tire Co., New York City; Lee Tire and Rubber Co., Conshohocken, Pa.; Victor Rubber Co., Springfield, O.

In addition to these the Goodyear Tire and Rubber Co. will be represented on this executive committee by Mr. Stadelman, while the Fisk Rubber Co. will be represented by Mr. Broadwell.

The Solid Tire Division met at the Yale Club. A. G. Partridge of the Firestone Tire and Rubber Co., Akron, O., was elected chairman, and Joseph C. Weston of the United States Tire Co., New York City, was chosen vice chairman. They will represent their concerns on the executive committee, which will be composed of representatives to be named by the following companies:

Fisk Rubber Co., Chicopee Falls, Mass.; the B. F. Goodrich Co., the Goodyear Tire and Rubber Co., Akron, O.; the Hood Tire Co., Watertown, Mass., and the Kelly-Springfield Tire Co., New York City.



The District Sales Managers of the Garford Motor Truck Co., Who Attended a Recent Conference at the Factory at Lima, O. Sales Manager J. F. Bowman in the Center of the Back Row.

GARFORD SALES MANAGERS AT FACTORY CONFERENCE.

A conference of the sales district managers of the Garford Motor Truck Co. was recently held at the factory at Lima, O., this being an annual event. One of the purposes of the gathering was for the field men to meet General Sales Manager J. F. Bowman, who has assumed charge of the distribution of Garford trucks. Mr. Bowman is well known in the industry and trade, he having been for a considerable period sales manager for the Federal Motor Truck Co., and following this was vice president and sales director for the Acason Motor Truck Co. Both of these concerns are located in Detroit. In his work with these companies Mr. Bowman has visited practically every commercial center in the United States, and is in intimate touch with a very large number of individuals and concerns engaged in the trade. In the accompanying illustration Mr. Bowman is standing in the center of the rear line in the doorway.

URGES MOTOR LAW CHANGES IN NEW YORK STATE.

State wide licensing of every person operating a motor vehicle, the examination of all drivers as to moral, mental and physical fitness, the elimination of the illiterate and the unskillful from the drivers of New York, as well as those under the age of 18, and the establishment of a 10 days' beginner's period, are some of the changes in the automobile law of New York state recommended by a traffic conference held in the Traffic Court in New York.

EDWIN DENBY, NOW MAJOR, BACK IN AMERICA.

Further honors have come to Edwin Denby, treasurer of the Denby Truck Co., and formerly a congressman, who enlisted in the Marines as a private, and he is now a major. He is at Beaufort, S. C., having recently returned from several months active service overseas. Maj. Denby was at one time president of the Detroit Board of Commerce.

REVERE RUBBER CO. ADDS TO PLANT.

The Revere Rubber Co., Providence, R. I., a subsidiary of the United States Rubber Co., has awarded a contract for a one-story, 40 by 120 foot addition to its plant, to be erected on Hemlock street, Providence, at a cost of $20,000.

E. C. Dunbar, Detroit, has assumed the chairmanship of a truck board created by the American Automobile Association. John R. Eustis is secretary of the board.

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BIG TRUCK DEMONSTRATION PLANNED IN MACON.

The Macon, Ga., Chamber of Commerce is planning a motor truck demonstration day, which it hopes to make the greatest event of its kind ever in the South. It will be held the latter part of March or early in April.

More than 250 trucks and cars will be exhibited. Following a parade through the business section of the city they will be divided into six trains and will go out into as many directions to terminal points of about an equal distance from the city. On the outgoing trip the trucks will be loaded with merchandise and on the return with live stock and products.

Stops will be arranged along each route and adem onstration rally will be held at each terminad point. The personnel of each train will include specialists whose duty it will be to record every phase of the test concerning mechanical operation and cost, highway and bridge conditions, tonnage, time, etc.

Truck dealers and manufacturers have promised hearty cooperation. Merchants, farmers and city and county officials will also assist in making the event a success.

NEW TURNBULL TRUCK DISTRIBUTORS.

Carl Changstrom, 2020 Farnum street, Omaha, Neb., has been appointed western sales manager for the Turnbull Motor Truck and Wagon Co., Defiance, O. The Turnbull company has closed contracts with these dealers and distributors for the disposition of the Defiance 1½ and two-ton motor trucks:

Standard Motor Car Co., Omaha, Neb.; Jackson Motor Co. of Missouri, Kansas City, Mo.; Mound City Buggy and Auto Co., St. Louis, Mo.; Gale Truck and Supply Co., Sioux City, Ia.; R. D. Rockstead, Milwaukee, Wis.; H. W. Elson, Peoria, Ill.; Frank A. Gillis Motor Sales Co., Ltd., Halifax, Nova Scotia; Ohio Valley Implement and Transfer Co., Cincinnati, O.; Biscoe & Barnes, Mine Run, Virginia; Jefferson Cooperage Co., Ranson, W. Va.; D. T. Reeves & Son, South Boston, Va.; Davis & Wood, Charlottesville, Va.; C. D. Nottingham, Sea View, Va.; Ambia Lumber Co., Ambia, Ind.

EARNINGS OF AMERICAN BRASS CO. DECLINE.

The report of the American Brass Co. for the year ending Dec. 31, 1918, showed earnings for the capital stock of $26.61 a share, as compared with $47.39 in 1917. Operating expenses were heavily increased. Net profits for 1918 totaled $3,992,219, against $7,109,177 in 1917 and $10,991,699 in 1916.

CONTINENTAL MEN AT SHOW.

George W. Yeoman, treasurer, and John G. Painter, sales manager, represented the Continental Motors Corporation at the New York automobile and truck shows. The company had no exhibits this year for either the New York or Chicago show.

Auto Dealers Want National Shows Given Over

The unexpected successes of the New York and Chicago automobile shows, coming so soon after the virtual closing of the war, and while many of the large manufacturers are still in a stage of readjustment from the making of munitions to peace time production, led many motorists to ask whether the local dealers, who have conducted the shows, would assert the right to hold the annual shows next year at the expense of the manufacturers affiliated with the National Automobile Chamber of Commerce, under whose auspices the national shows have formerly been held.

This is an interesting question that will be thoroughly discussed by the prominent motoring interests during the next few months. The managing committee of the New York dealers, realizing that the show was a bigger success than many had expected, are strongly inclined to continue as the automobile show managers in New York City. Charles H. Larson, in discussing the situation with Charles M. Brown, president of the New York Dealers' Association, and William C. Poertner, said very positively:

"I can see no right or reasonable way that can now be used by the manufacturers to take the show management from the dealers who are distributing the cars in the metropolitan territory. Many of the manufacturers are taking the view that the time in the industry has passed when it is necessary for its national organization to conduct the national shows. The industry has grown to such an extent that the big individual shows, as those in New York, Chicago, Boston, Minneapolis and Philadelphia, possess most of the features of the former so-called national shows hitherto restricted, so far as name was concerned, to New York and Chicago.

"The New York show under the dealers and with the co-operation of the manufacturers, which has been splendidly given this year, will naturally be regarded as the big national show of the year, for it is the one in which the makers always strive to give the first general exhibit of their new models. The New York dealers are ready to give next year's show as it is logically a dealers' event."

Charles A. Stewart, manager of the show, expressed similar views. The members of the National Automobile Chamber of Commerce, which contains over 120 of the big car makers in the country, abandoned the plan to give the customary 1919 show before the signing of the armistice as a war measure, and after the cessation of hostilities they voted to adhere to that decision. The New York dealers, as well as the dealers in Chicago, stepped into the breach at once and saved the situation for the motor car industry as to the big shows of the year, and it is now admitted that the stability of the motor car industry has been presented in a more favorable light before the public than would have been the case if the two big shows of the year had been omitted.

REDUCTION IN PRICE OF GASOLINE IS EXPECTED.

As a result of the action of the United States Shipping Board in turning back 145 tankers which had been commandeered for war purposes, and which have been returned to their owners, a reduction in the price of gasoline is expected. Most of these vessels will be employed to transport oil to this country from Mexico. The total dead weight tonnage of the ships returned is 1,140,000.

JONES NOW EASTERN REPRESENTATIVE FOR TORBENSEN.

The Torbensen Axle Co., Cleveland, O., manufacturer of internal gear drive truck axles, announces the appointment of W. Jones as eastern sales representative.

Mr. Jones is well and favorably known



W. M. Jones, Eastern Sales Representative Torbensen Axle Co.

in the automobile industry. For the past nine years he has been connected with the Sheldon Axle and Spring Co. as sales engineer. He was also assistant engineer for the company at one time.

RENAULT HONORED FOR BUILDING TANKS.

Automobile manufacturers of France tendered Louis Renault a banquet to commemorate his promotion to the rank of officer of the Legion of Honor, which honor was given him because of the part his factory played during the war and particularly for designing and building the Renault light tank. Leading members of the automobile industry attended.

KIRCH CO. REDUCES WORK HOURS.

Working hours have been reduced from 60 to 49 hours a week by the Kirch Manufacturing Co., Sturgis, Mich., and this slogan adopted: "Greater Production in 49 Hours Than in 60 Hours; Greater Prosperity and More Happiness."

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PLATE XXVII

GENERAL SERVICE STATION

A Three-Story Building, 50 by 100 Feet, on Corner Location, Arranged for Freight and Passenger Vehicle Storage, with Every Facility for Repair Work.

WHEN an automobile dealer who is to handle both passenger cars and trucks plans to erect a service station he is bound to be confronted with many problems. It is much simpler to plan a building that will be used for the handling of just passenger cars, or simply trucks, but when the structure has to serve both cars and trucks many unusual provisions have to be made if the building is to be laid out so that high grade service may be given. The architect has given due consideration to these requirements in his presentation of a layout that will combine essential features necessary for both trucks and cars.

The service station and salesroom for motor trucks and pleasure cars which is suggested ed in the accompanying sketches, would be up-to-date in every respect. A building of this type under present conditions could be built at an approximate cost of $35,000, and the elimination of some of the features would result in an appreciable reduction of this figure.

Very liberal provision is made for the used car department, as the entire third floor could be devoted exclusively to this purpose, if desired. Service stations are finding that they must provide extensive space for the used cars, as these have become such an important factor in business.

Possibly a dealer needing a building of about this size might find that he does not need so much space for his used car department. If so, he can readily find other uses for any part of the floor. Many purposes to which sections of the floor might be utilized will readily suggest themselves.

The architect's aim has been to picture a structure that would entirely meet the needs and desires of a progressive dealer who insists upon a thoroughly modern service station possessing every reasonable convenience and so designed that everything connected with his business may be done in a most practicable and efficient way.

A three-story building, with an area of 50 by 100, is shown. It is represented as being on a corner lot, as such a location for a large building devoted to the handling of trucks and passenger cars has many great advantages in its favor and is really essential.

The sketches show two plans and the front elevation, the third floor plan being omitted. The first floor is for motor trucks, with provision for openings and height. In the forward part is a large show room having a separate entrance from the street and also large show windows on both streets.

A large vestibule and stair hall are shown in the front of the building, and these lead to the second and third floors. Two service doors lead from the side street, as shown, opening into the storage department for trucks. Next is a washstand, followed in order by an elevator, which goes from the first to third floors.

Ample provision has been made for repairs, as can be seen from the large repair department shown. Adjoining the repair shop is a large machine shop, ready to handle anything from repairing parts to making them.

This would necessitate the installation of machine tools, such as lathes, a milling machine, a shaper, a drill press and a radial drill. Also provision may be made for a power saw. In a shop of this size these tools would be an absolute necessity in order that owners of cars may be given prompt and efficient service, obviating such delays as would be due to sending to the factory for parts to replace what could be repaired at the service station that is equipped with facilities to do restoration or even make new units if need be. A well planned machine shop is worthy of the consideration of anyone contemplating the construction and operation of an up-to-date service station.

The second floor has an office and women's room in front, and also a large storage section for the display and storage of passenger cars. At the rear is the elevator, also toilets, supply room and locker room. There are turntables on both the first and second floors.

As to the construction of the building, the foundation is of concrete, with super structure brick and steel. The floors are concrete, with steel floor beams, concrete reinforced. There is steel sash throughout. The service doors are automatic, raising out of the way to the ceiling.

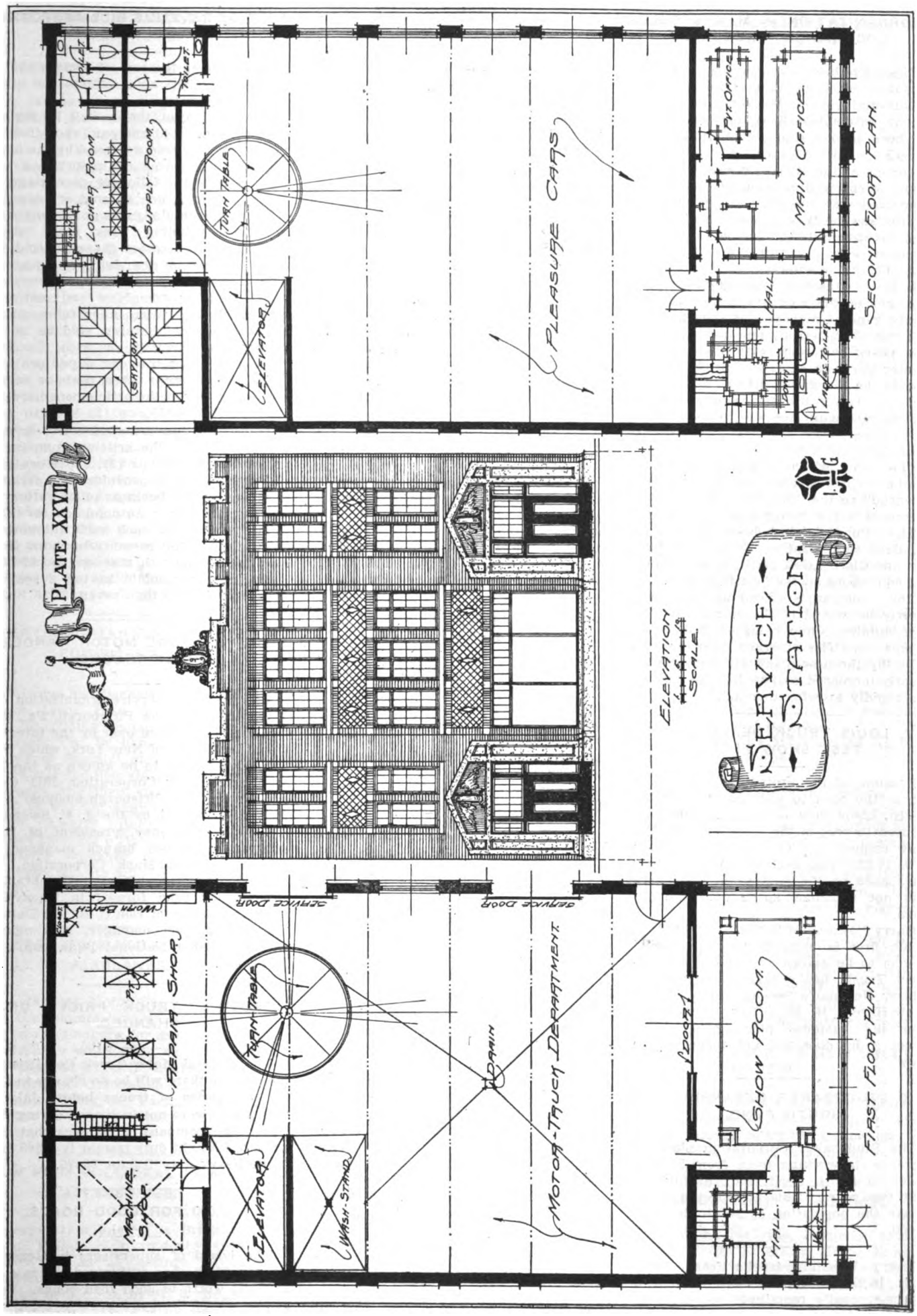
General treatment of the outside bricks is with concrete trimmings, as shown. A rough texture brick with large white joint is suggested. Bricks may vary in color so as to give striking effects.

Heating by steam wall radiation is preferred. The heating plant would be in the basement under the machine shop, with stairway leading from the repair shop. Placing of lights and type is left to the discretion of the owner.

Such a structure would undoubtedly make an unusually good service station and sales room for motor trucks and passenger cars. The fact that the entire third floor could be reserved for the handling of used cars should prove an especially attractive feature.

There are several minor features that could be incorporated to suit the business of any individual dealer. Any further particulars desired will be gladly furnished upon request by the Architectural Department of this publication.

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REORGANIZATION IN M. & S. SELF-LOCKING DIFFERENTIAL.

There has been a reorganization in the management of the M. & S. Self-Locking Differential. W. T. Walker, well known in the automobile field for years past, has been appointed president and general manager. Mr. Walker was formerly president of the Walker-Weiss Axle Co., Flint, Mich., and previous to that was connected with the Timken Roller Bearing Co. and the Weston-Mott Co. For the past eight months he has been in government service, working on the production of military trucks.

L. O. Haskins has been appointed sales manager of the company. He was formerly general manager of the O. & S. Bearing Co., Detroit, and for the past two years has been with the Quartermaster Corps in charge of truck production in the Chicago district.

R. S. Townsend has been appointed factory manager. He was formerly with the Walker-Weiss Co. and the Weston-Mott Co.

The name of the company's product has been changed from the "M. & S. Differential" to the "Powrlok," and will be marketed in the future under that name.

The "Powrlok" has been adopted as standard equipment on Torbensen, Timken and Clark axles, and it is also standard equipment on the "Nash Quad."

The company's headquarters will shortly be moved to Cleveland, where a new building is now being erected for its occupancy. The enlarged quarters provided by the new plant will permit of a greatly increased output, to take care of the rapidly growing demand.

ST. LOUIS TRUCK DEALERS PROTEST SHOW PLAN.

Because of the protest of truck dealers at the plan to exclude trucks from the St. Louis show, a committee was appointed to reopen the question with the show committee. The show takes place Feb. 17-22. The decision to bar trucks was based on the contention that there was not sufficient space available for them.

Harry Newman of Harry Newman, Inc., which firm is marketing an assembled vehicle to be known as the Pioneer All-Steel Truck, has a large sign reading, "Harry Newman's Second Annual Truck Show Here." He plans to erect this sign over his business place, 3410 Locust street if he does not get space at the show.

BIG STUDEBAKER EXPANSION AT SOUTH BEND.

The Studebaker Corporation plans to increase its working force from 5000 to 12,000 in South Bend, Ind., during the next two years. This is expected to increase the population of South Bend by 20,000.

Thirty Republic trucks from Alma, Mich., in their way East, with 60 men in charge, recently remained over night in Saginaw, Mich.

PROFITABLE FARM HAULING WITH MOTOR TRUCKS.

The Goodyear Tire and Rubber Co., Akron, O., has issued a booklet entitled "Profitable Farm Hauling with Motor Trucks." It states:

"The ability to carry heavy loads across rolling fields, regardless of roads and seasons; to quickly transport farm products to market over sandy or muddy or snowy roads; to move live stock to shipping points with a saving of shrinkage in weight; to carry garden produce, fruits and other crushable materials to destination quickly; to save time and labor in bringing closer to the farms—all of this is what makes a motor truck a practical and profitable farm tool."

The booklet cites numerous examples of farm motor truck transport covering a wide diversity of service in representative sections of the country and abounds in photographs of pneumatic tired trucks that have proved their worth as individual units of farm equipment, with the story of each truck's performance reviewed.

Interesting figures are shown outlining comparisons of wagon costs with motor truck costs—with the motor truck in the ascendancy—as compiled by the United States Department of Agriculture. Copies of the new Goodyear booklet are available and free for the asking.

INDIANA TRACTOR BIG AID TO LUMBER MEN.

Work done by the Indiana road tractor of A. B. Rodger & Son has won favorable comment in lumber circles. While the chassis conforms largely to the standard two-ton specifications, the tractor is a special job with a 8¾ to 1 gear ratio in the rear axle, Smith metal wheels with dual four-inch tires on the rear and a wheelbase of only 126 inches, equipped with the usual fifth wheel.

The tractor, because of the small space in which it can be manouvered, is especially adapted for work in lumber yards, where a short turning radius is vital. The tractor is built to haul five tons, but frequently has handled without difficulty loads of more than eight tons.

TRUMBULL MAKES CHANGE.

Horace N. Trumbull, following his discharge from the Engineer Officers' Training School, Camp A. A. Humphries, Va., has been appointed advertising manager of the Wellman-Seaver-Morgan Co., Cleveland and Akron, O., manufacturer of rubber machinery and other mechanical equipment. Before entering the service Mr. Trumbull was advertising manager of the SKF Ball Bearing Co., Hartford, Conn.

G. M. C. TRUCK PRICE CUT.

The General Motors Truck Co., Pontiac, Mich., has reduced the price of its model 16, the ¾-ton truck, $280, making the price $1495, which was the pre-war selling price.

TEXT OF REVENUE BILL AFFECTING AUTO TRADE.

Following is the text of section 900 of the revenue bill as it affects the automotive industry:

Sec. 900. That there shall be levied, assessed, collected and paid upon the following articles sold or leased by the manufacturer, producer or importer, a tax equivalent to the following percentage of the price for which so sold or leased—

(1) Automobile trucks and automobile wagons (including tires, inner tubes, parts and accessories therefor, sold on or in connection therewith or with the sale thereof), 3 per centum.

(2) Other automobiles and motorcycles (including tires, inner tubes, parts and accessories therefor, sold on or in connection therewith or with the sale thereof), except tractors, 5 per centum.

(3) Tires, inner tubes, parts or accessories, for any of the articles enumerated in subdivision (1), or (2) sold to any person other than a manufacturer or producer of any of the articles enumerated in subdivision (1) or (2), 5 per centum.

Another section provides that persons carrying on the business of operating or renting passenger automobiles for hire shall pay $10 for each such automobile having a seating capacity of more than two and not more than seven, and $20 for each such automobile having a seating capacity of more than seven.

INTERNATIONAL MOTOR HANDLES MACK TRUCKS.

The sales and service organization for Mack trucks in the Pittsburgh, Pa., district has been taken over by the International Motor Co. of New York, which has formed a branch to be known as the International-Mack Corporation, 5911 Center avenue. The Pittsburgh business was formerly handled by the J. F. Sweeney Co. J. F. Sweeney, president of that company, becomes branch manager of the International-Mack Corporation. A new International-Mack Corporation branch has been formed in Knoxville, Tenn., in charge of Don C. B. Van Duzen, southern district manager, with offices in the Holston National Bank building, Knoxville.

FEDERAL TRUCK PRICES UNCHANGED.

The Federal Motor Truck Co., Detroit, guarantees there will be no change in the Federal series of trucks before July 1. The prices were not increased during the war. The company announces that the price of its light duty tractor is $2500 and of its heavy duty tractor $3475.

$500,000 FOR GOOD ROADS.

The board of supervisors in Genesee county, Mich., has authorized the sale of $500,000 worth of good road bonds. Voters approved the bond issue in 1917, but the war delayed the sale.

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LARGE TONNAGE HANDLED BY SIX-TON TRUCK.

Investigation shows that the amount of freight one efficiently operated motor truck can handle is surprising. As an example, a six-ton Packard, entered in the National Truck Efficiency Test last summer by the Pennsylvania Utilities Co., Easton, Pa., hauled enough freight in three months to make up six trains of 50 freight cars each. This would be equivalent to one train three miles in length.

The truck was in operation 92 successive days and nights and in exact figures transported 11,828 tons of material—coal, ashes, sand and brick. The average was 128 tons per day, equal to three freight cars of 40 tons capacity. Operated on this basis for a year this would amount to 90,000,000 pounds of material.

Quite as remarkable was the distance covered by this truck, 7851 miles to be exact, equivalent to nearly three trips across the American continent, a journey from New York to San Francisco every month, and loaded to capacity. At this rate the mileage for one year would reach one and a quarter times around the globe.

During the three months the truck was out of service for repairs only 32 hours, and most of that time, the owners state, because of an accident which was the fault of neither truck nor driver.

ADVERTISING MANAGER FOR CLARK EQUIPMENT CO.

Following his discharge from the Air Service, Lieut. Ezra W. Clark has become advertising manager for the Clark Equipment Co., Buchanan, Mich., manufacturer of internal gear axles, locking differentials and disc steel wheels for motor trucks and high speed twist drills. Mr. Clark was for many years city editor of the Chicago Inter-Ocean and later business manager of the Mobile Item and advertising manager of the Memphis News-Scimitar. He will be located at the Chicago office of the Clark Equipment Co. in the Railway Exchange.

PACKARD TO MAKE COMMERCIAL AIRPLANES.

The Packard Motor Car Co. will soon begin the manufacture of airplanes, carrying two passengers, for commercial use. The airplanes will have a motor of Packard design and will sell for about $15,000. In entering the commercial airplane field of manufacturing the Packard company takes the lead of other automobile manufacturers.

NEW FIRM WILL DEAL IN AUTO ACCESSORIES.

A corporation known as Bradsto Appliances, Buffalo, N. Y., to deal in auto accessories and metal castings, has been chartered in New York state, with a capitalization of $50,000, by H. E. Bradford, J. H. Weir and J. W. Farrar, Buffalo.

GENERAL MOTORS SUBSIDIARY TO AID AGENTS.

A subsidiary company, whose functions it will be to assist dealers in automobiles and motor trucks in financing their purchases has been formed by the General Motors Corporation. The concern has been incorporated under New York state laws under the name of the General Motors Acceptance Corporation, with $2,000,000 paid in capital and $500,000 surplus. W. C. Durant and associates in the General Motors Corporation subscribed the stock.

Paul Fitzpatrick is vice president and general manager of the new concern. He was formerly vice president and director of the Continental Guaranty Corporation, an organization formed several years ago to extend credit to buyers of automobiles.

J. A. Haskell is president and Alfred H. Swayne vice president and financial manager of the Acceptance Corporation. While the primary purpose is to finance automobile transactions, it is understood that the business in acceptances will take further ramifications. The Du Pont interests are closely identified with the General Motors Corporation, and it is expected that credit facilities offered by the acceptance company will be made use of by various Du Pont enterprises.

RUBBER MEN TO CONTINUE STANDARD SIZED TIRES.

At the annual meeting of the Rubber Association in New York it was decided to continue the nine standard sizes of pneumatic tires evolved by the War Service Committee of the association in conjunction with the Society of Automotive Engineers.

These nine sizes include both plain and non-skid treads in the following dimensions, all being straight-side type except the two smallest, which are clincher: 30 by 3½, 31 by 4, 32 by 3½, 33 by 4, 34 by 4½, 35 by 5 for passenger cars and 36 by 6, 38 by 7 and 40 by 8 for commercial vehicles.

WHITE COMPANY WILL BUILD TRUCKS ONLY.

The White Co., Cleveland, will not resume the manufacture of passenger cars, but will concentrate its increased production facilities on building trucks. The company plans to turn out more trucks than any other concern in the United States.

The company was one of the pioneer builders of automobiles and first made a steam car. In 1911 this was discontinued in favor of a gasoline engine model. The company was also one of the first to build trucks.

NAPOLEON MOTORS INCREASES CAPITAL.

The Napoleon Motors Co., Traverse City, Mich., has increased its capital stock to $500,000. It is reported that the entire output of Napoleon trucks for this year has been contracted for.

WOMAN FINDS SUCCESS IN SALE OF MOTOR TRUCKS.

Miss Anna Baunwald of New York City is meeting with success as a truck saleswoman. She is a member of the sales staff of the Arlington Motors Co., New York distributor of Clydesdale trucks. She has worked up from a factory girl to truck salesmanship.

Attending night school was the first step in her advance. Then she became a bookkeeper. Having higher ambitions she took a course in accountancy in the College of the City of New York.

"One day," she says, "while attending a lecture at the college I became thoroughly disgusted with the idea of being an office machine."

Salesmanship appealed and she began to consider what she should sell. Motor trucks held such a fascination that she applied to the Arlington Motors Co. for a position on its sales staff.

The manager of the company was bewildered.

"Women don't sell motor trucks; only men sell them," he explained.

"But here's one woman who can sell them," insisted the former factory girl.

She landed the job she sought.

"It was a decided novelty at first," she says. "Men smiled when I came to present my proposition and some of them expressed the opinion that I was the nerviest woman in the world.

"But in a short time they became accustomed to the idea, and now I have very little difficulty, particularly as I have an organization that backs up my promises that I may make for them."

Her average sales have been about six trucks a month for the last six months.

HARTFORD DEALERS' ANNUAL AUTO SHOW.

The Hartford Automobile Dealers' Association, Inc., will have its annual automobile show Feb. 22-March 1, under the auspices of the First Regiment, Connecticut State Guard. Ben F. Smith, who successfuly managed past exhibitions, will be manager again this season. It is planned to make the show the biggest and best ever in Hartford.

There will be a separate section for passenger cars on the first floor, which covers a large area. Tractors, trailers and trucks will be displayed in the basement. Farm implements will be shown in conjunction with the tractor display.

PANHARD TO PRODUCE NEW TRUCK MODELS.

The Panhard Motors Co., Grand Haven, Mich., it is reported, plans to bring out three new models of its trucks, namely, a 1½, a 2 and a 2½-ton, in addition to the 1-ton model.

MCBRIDE STILL IN SERVICE.

Capt. V. K. McBride, formerly sales manager of the American Motor Truck Co., has been transferred from the Ordnance Department at Jackson, Mich., to the Ordnance Department offices in Detroit.

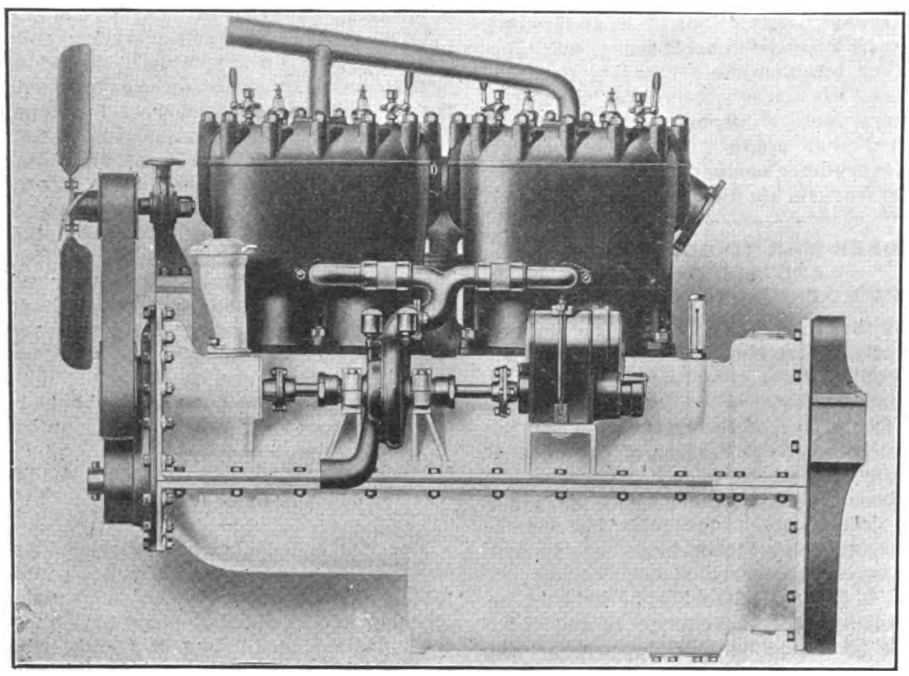
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WISCONSIN "LIBERTY" ENGINES

"LIBERTY MODELS" is the specific designation given by the Wisconsin Motor Manufacturing Co., Milwaukee, Wis., to a new series of engines designed for truck and tractor service that it is now producing. The Wisconsin company has specialized engines almost exclusively, and it is now one of the largest concerns of the American industry. These have been developed for differing services, for passenger vehicles and power yachts, and some of these types have been used for automobile racing with a very large measure of success. The company has built both four and six-cylinder engines, the heavy duty four-cylinder constructions for trucks and tractors and the six-cylinder units for passenger cars.

While the engines do not differ with reference to basic principles of design or to materials or workmanship, they do differ in regard to dimensions and proportions of parts, as well as constructional details. Some of the smaller four-cylinder types have the cylinders cast en bloc and the larger of this class and the six-cylinder engines have the cylinders cast in pairs.

Model	RAU	RBU
No. Cylinders	4	4
How cast	Pairs	Pairs
Bore, inches	4¾	5
Stroke	6	6
S. A. E. rating	36.10	40
Type	L-Head	L-Head
Head	Detachable	Detachable
Crankshaft bearing	3	3
Size crankshaft, inches, front bearing	2¼	2¼
Size crankshaft, inches, middle bearing	2 5/16	2 5/16
Size crankshaft, inches, rear bearing	2⅜	2⅜
Tappet type	Roller	Roller



Left Side of New Wisconsin "Liberty" Model Engine, Designed for Heavy Duty Truck and Tractor Propulsion, Showing the "Three-Point All-Steel Suspension."

Designed for Heavy Duty.

The Liberty models, so-called, have been developed to meet the requirements of the most advanced practise for truck and tractor service, and are designed to burn the lower grades of fuel, which are often the only qualities obtainable, and which do not afford the satisfactory economy or power in types designed for better fuels. The series consists of four sizes, which are known as RAU, RBU, CAU and EAU. The sizes are shown by the following dimensions:

The engine cylinder units are cast from highest grade gray iron with the water jacket integral, the water chambers being very large. The heads are cast from the same material and the valves and spark plug bores are surrounded with large water spaces. The pistons are of the same material. Much care is taken in machining the cylinders, heads and pistons to obtain accuracy and they are frequently inspected and tested for defects.

Aluminum Sectional Crank Cases.

The crank cases are aluminum castings, these being in two parts, the upper sections having extremely heavy webs to carry the three main bearings. The lower sections are the crank case bases and the oil reservoirs. There are front extensions that house the timing gearsets, and rear extensions that form the bell housings.

The crankshafts are drop forged from chrome nickel steel, that are heat treated and ground to size, the crankpins being 2¼ inches diameter and the journals from front to rear being 2¼, 2 5/16 and 2⅜ inches diameter respectively. The camshafts are a three-bearing type, drop forged, with the cams integral, heat treated, case hardened and carefully ground and balanced. The bearings are large, so the cams may be passed through them. Flanges for mounting the timing gears at the forward ends are forged integral with the shafts. End play of the camshafts is obviated by the use of spring mounted plungers seated in the covers of the timing gearset cases.

The timing gears are large and have wide faces. The camshaft gear is cast iron, but the other gears of the set are drop forgings, heat treated, that are helically cut. The connecting rods are steel drop forged I sections. The valves are large and have ample clearance. The valve tappets are a roller type, of unusually large diameter, and the tappets, rollers and the roller pins are hardened, so that maximum endurance will be afforded. The tappets operate in cast iron guides that are secured by crabs and studs. The valve mechanism is enclosed by cover plates that are easily removable and there are breather holes in the base of the chamber through which oil mist is admitted to lubricate the tappets and valves. The bearings of the crankshaft, camshaft, pump shaft and the idler gear of the timing gearset are high grade babbitt in bronze cages, and the crankshaft and crankpin bearings are fitted with one-piece laminated shims.

Pressure Lubricating System.

The oiling system is maintained to be very efficient. It is a pressure type, there being a oil header so-called cast into the crank case with ducts to the main bearings of the crankshaft. In the crankshaft are drilled ducts to the crankpins and the connecting rods are fitted with tube extending from the crankpin bearings to the wristpins. The oil pump is bolted to the upper section of the crank case and the intake extends down into the oil reservoir and into a screened well, the screen of which is removable without dismantling the oil pump or taking off the lower part of the crank case. There is a relief valve that is set for a maximum pressure and when this is exceeded the oil is by-passed so that there can never be pressure above what is necessary to obtain practical and effective lubrication. There is a large combination breather and oil filler fitted at the forward end of the crank case on the same side as the oil pump.

The fuel intake and the exhaust manifolds are cast as a unit and are so designed that the mixture inhausted from the carburetor will vaporize and be efficiently combustible when it reaches the cylinders. The diameters of the intake manifold are so proportioned that economical carburetion will obtain. The engine is equipped with a large fan that is driven by a two-inch flat belt from a pulley on an extension of the water pump shaft.

Standard Units May Be Used.

The design of the crank case is such that electric generators and starting motors having the standard S. A. E. flanges may be mounted on them. These units,

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as well as the carburetor and the magneto are so located that the engine is extremely accessible for inspection or repair, and the mounting of a steering gear at either the right or left side of the engine is entirely practical. Means are provided for driving any of the commercial governors when these are desired and manifolds can be furnished that are adapted for use with the different instruments.

One of the features of the engines is the "three-point all-steel suspension," which is in effect a large diameter trunnion on the iron cover of the timing gearset case, that seats in a frame cross member and a cast steel or malleable iron support arm that is bolted to the bell housing, this being a heavy metal ring on which are arms such as are cast integral with crank cases of many makes of engines. With this connection, so statement is made, the wear of the arms is practically obviated. With aluminum this wear means increased diameters for the bores for the anchor bolts, with consequent loosening of the engine, or perhaps breakage of the arms because of vibratory stresses. In the event of breakage of the steel support, which is very remote, the member may be easily replaced at comparatively small expense.

Other Four-Cylinder Engines.

The company also produces five other sizes of four-cylinder engines, these being designated as types TAU, UAU and VAU, and CAU and EAU. Of these the first three have cylinder bores of four, 4¼ and 4½ inches respectively and stroke of six inches, and these are rated at 25.60, 28.90 and 36.10 horsepower by the S. A. E. formula. The cylinders of these engines are an L head type cast en bloc, with detachable heads. Aside from having mushroom tappets these are constructed practically the same as the RAU and RBU engines, the dimensions being in ratio to the stated differences. The CAU and the EAU engines have cylinder bores of 3¾ inches and four inches respectively and stroke of five inches. These, also, in a general way conform to the construction of the larger engines, the principal difference being that the cylinder blocks are cast with the heads and water jackets integral, and the valve tappets are mushroom type. No relief valve is fitted to the lubricating systems of these engines, as the pumps are smaller and pressure relief is not regarded as necessary.

MOTOR EQUIPMENT DIVISION HEADED BY COL. GLOVER.

The plan of organization of the office of director of sales of the War Department would make Col. Fred Glover head of the division for handling trucks and motor equipment, including trucks, motors, motorcycles, side cars and all supplies and repair parts pertaining thereto, and animal and hand drawn vehicles.

Elbert Warford has returned as advertising manager of the Seattle branch of the B. F. Goodrich Rubber Co., following his discharge from the army aviation service.

Engine Designing is Fuel Problem Solution

Dr. H. C. Dickinson of the National Bureau of Standards read a paper on the improvement of the fuel economy of automotive engines at the annual meeting of the Society of Automotive Engineers in New York. Dr. Dickinson is in active charge of research work pertaining to automotive engines, including the Liberty and other airplane engines, at the Bureau of Standards.

He states that it is important for automotive engineers to investigate at once the fuels available for their industry and determine the number of car miles or ton miles that can be obtained from the total supply remaining.

Of fuels in sight for motor vehicles we have only petroleum products, alcohol, benzol and possibly shale oil distillates. But before all of these can be used successfully, it is necessary to adopt our engines to handle them properly. It remains to be seen whether it will be best hereafter to sell two or three different kinds of liquid fuels, one less volatile than the other, or whether it would be more advantageous commercially to concentrate on a combination fuel, and adapt all engines to use it. The present trend of development favors gasoline and kerosene, and efforts are being made to construct appliances for gasoline engines to adapt them to utilize kerosene as well.

The brake thermal efficiency of automobile engines running under average load conditions is 10 per cent. or less. In other words, 90 per cent. of the heat of the fuel now goes to waste. Some of this loss is due to operating with a 25 to 50 per cent. richer mixture than is necessary. This causes carbonization and lubrication difficulties with no attending advantages. With better carburetion it would probably be possible to run an additional million cars without increasing the present total gasoline consumption.

After enumerating the various causes for the present lack of efficiency in the use of fuel, Dr. Dickinson pointed out that if automotive engineers can succeed in reducing all these losses by one-half the effect will be equivalent to doubling our present fuel supply. To bring about this highly desirable result it will be necessary to put the best minds to work on the problems involved. Researches and tests will have to be more extensive and more thorough than in the past. No one company and no one laboratory will be able to find the whole solution. It is necessary for all concerned to share in this work if we are to carry out our object of conserving the available supply of engine fuel.

FORM OVERSEAS MOTOR FIRM.

The Overseas Motor Service Corporation has been chartered in New York state. The incorporators are B. Lockwood, E. H. Kelly and F. A. Gaynor, 43 Cedar street, New York City. Capitalization is $100,000.

ORIENTAL ATMOSPHERE MARKS LOS ANGELES SHOW.

An oriental aspect made the automobile show of the Motor Car Dealers' Association of the Pacific coast in Los Angeles a decided novelty. There were silks and hangings, ivory carvings, bronze vases with spiny dragons and other Chinese decorations valued at $150,000 in the three mammoth tents that housed the show. There were 150,000 square feet of exhibit area. Tents were used, as there is no Los Angeles building large enough that could be secured. In addition to these decorations the dealers spent $30,000 in fitting up the tents.

Despite an influenza epidemic the week of the show, the exhibitors were delighted with the results. There were about 50 motor car exhibitors. Factory men who attended declared that the special equipment on the cars surpassed anything they had ever seen. Los Angeles top and body builders take just pride in their artistic work. The Los Angeles idea in special bodies was carried further than ever before. The closed car was featured for the first time.

There were 50 trucks on exhibition. The accessory department was especially complete.

MITCHELL HEAD OF TURNBULL WAGON CO.

The Turnbull Motor Truck and Wagon Co., Defiance, O., at its annual meeting, elected A. F. Mitchell president, to succeed W. O. Allen, general manager of the Allen Motor Car Co., Fostoria, who continues as a member of the board of directors. Mr. Mitchell is vice president of the Northern National Bank of Toledo. Other officers were elected as follows:

Vice president, R. G. Holgate, vice president of the Merchants National Bank; treasurer and general manager, Charles C. Gorman; secretary, L. J. Spafford; general sales manager, W. L. Krapp; advertising manager, George A. Wieland; chief engineer, H. K. Rienoehl; the directors being the officers and T. T. Shaw; C. H. Kettenring, vice president and general manager of the Defiance Machine Co.; J. G. Schrag, secretary and treasurer of the Screw Machine Products Co.; R. C. May, general sales manager of the Defiance Machine Co.; F. J. Papenhagen, secretary and manager of the Defiance Printing and Engraving Co., and W. O. Allen.

CLARK EQUIPMENT PROCESSES SHOWN IN MOVIES.

Industrial films protraying actual processes of manufacture in the plants of the Clark Equipment Co., Buchanan, Mich., manufacturer of disc steel wheels, internal gear axle and locking differentials for motor trucks, were shown during the New York and Chicago shows. The films were shown in the Waldorf in New York and the La Salle in Chicago as supplementary exhibits to the disc wheels and axles displayed at the regular shows.

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PACKARD TRUCKS SAVED MANY FREIGHT CARS FOR U. S.

More than 4,500,000 pounds of freight and express for the Packard Motor Car Co. were carried in Packard trucks during the past year. There were 3699 Packard vehicles sent to consignees under their own power which, with the freight and express transportation noted, released at least 2000 freight cars to haul the mountains of war materials so desperately needed abroad.

This was a very substantial realization of the slogan, "Save a Freight Car for Uncle Sam" by those who originated it.

Truck transportation included work for the government as well as for the Packard company, and frequently trucks were used in transporting material on urgent calls to points as much as 400 miles distant. More than 3000 of the trucks sent overland were for army use, and many of them carried three tons of merchandise to the port of debarkation.

This amounts to 9000 tons of munitions vital to the activities of Gen. Pershing, and is equivalent, with the trucks, to two standard ship loads. The value of this relief to the railroads by this freight movement over the highways cannot be comprehended in ton miles, for a large measure of it was at the time when weather conditions last winter practically blockaded the great munitions carrying lines.

CANADA MAY REDUCE TAX ON AUTOMOBILES.

Representatives of the organized automobile industries of Canada recently conferred with Sir Thomas White, acting premier, and the Hon. A. K. MacLean, acting minister of trade and commerce, and urged the removal of the excise war tax on automobiles. The surtax imposed in the last budget is 10 per cent. on all automobiles, and is applicable to imported cars or cars manufactured in Canada. The authorities are considering the plea for the removal of this tax. Possibility of the removal of the general war tariff increase of 7½ per cent., put into effect during the first few months of the war, is also in sight.

NEW HOUSTON, TEX., FIRM TO BUILD TRUCKS.

A new concern, announcing that it will build a plant to manufacture trailers, bodies and trucks, to be known as the American Trailer and Body Works, has been granted a charter in Texas. Its headquarters will be at 339 Kress building, Houston, Tex. The company was organized by E. H. Fleming, J. Campbell Bailey and I. C. Timmens.

DREADNAUGHT MOTORS INCORPORATED.

Under the laws of Delaware a charter has been filed for the Dreadnaught Motors Corporation, dealer in automobiles, etc., by Richard H. Hollen, M. M. Hunt and John A. Masseb, all of Chicago, with capital set at $550,000.

Trucks and Tractors at Big Detroit Auto Show

Detroit's automobile show, March 1 to 8, is expected to prove the greatest ever organized in that city. Trucks and tractors will be among the features. There will also be large departments of passenger cars and accessories.

The truck division will extend from one end of the building to the other, a distance of 400 feet, with exhibits on both sides of a broad aisle. A special feature will be an airplane exhibit.

Passenger cars, trucks, tractors and accessories for which space has been taken include the following:

Passenger cars—Abbott, Briscoe, Buick, Cadillac, Chalmers, Chandler, Chevrolet, Columbia, Detroit Electric, Dodge Brothers, Dort, Essex, Ford, Franklin, Haynes, Hudson, Hupmobile, Jordan, King, Liberty, Marmon, Maxwell, Milburn Electric, Nash, Nelson, Oakland, Oldsmobile, Olympia, Overland, Packard, Paige, Peerless, Pierce-Arrow, Rauch-Lang Electric, Reo, Saxon, Scripps-Booth, Studebaker, Stutz, Willys-Knight and Winton.

Trucks—Acme, All-Power, Baker-R & L industrial truck, Chevrolet, Clydesdale, Columbia, Commerce, Dearborn-Smith Form-a-Truck, Denby, Dodge Brothers, Federal, Ford, Fruehauf Trailer, Fulton, G-M-C, Graham, Hall, Kelly-Springfield, Lapeer, Master, Maxwell, Nash, Packard, Paige, Pierce-Arrow, Republic, Service, Signal, Standard, Stewart, White, Winther and Wolverine.

Tractors—Cleveland Tractor, Fordson Tractor and R. & P. Tractor.

Accessories—Atlas Oil Co., George F. Balk, J. E. Bolles Iron and Wire Works, Detroit Steering Wheel Co., Erdman-Guider Co., Fred J. Esper, G. & M. Sales Co., L. Lawrence & Co., Liberty Primer Co., Modern Upholstering Co., E. H. Murphy, National Mileometer Co., Presto-Cloth Manufacturing Co., Remiler Rubber Co., Sewell Cushion Wheel Co., Simplicity Wheel Co., Thomas B. Snow and Tokheim Oil Tank and Pump Co.

ELGIN FACTORY STILL BUILDING TRUCKS.

The factory of the Elgin Motor Car Corporation is running at capacity building both passenger cars and government trucks. Production is being rushed on the Class AA trucks in order to complete the government order as soon as possible so the entire facilities of the plant can be devoted to the building of the regular passenger models.

NEW TIRE MANUFACTURER.

A charter has been filed in Delaware for the Keeley Tire and Rubber Co. to manufacture tires for automobiles, etc., by Edward J. Keeley, Charles H. Bortell, Jr., New Haven, Conn., and Harry F. Gilg, Washington, D. C., with $1,000,000 capitalization.

MOTOR TRUCKS REDUCE COST OF MILK AT MILWAUKEE.

Motor truck transportation over good roads has cut the price of milk two cents per quart in Milwaukee. Frank J. Edwards, local Kissel distributor, points out that Milwaukee county has been noted for its progressiveness and promotion of good roads, and much progress has been made in building concrete highways from the city in every direction to the county limits.

"This is proving a very profitable investment," says Mr. Edwards. "In place of the horse drawn milk wagon lumbering along the rough country roads at a snail's pace, you see motor trucks rolling quietly over the concrete roads at 15 to 20 miles per hour, delivering milk from farms to the city early in the morning. They bring the milk to the city early enough to be distributed the same day if necessary, or early the following morning. In the case of the horse drawn transportation system, the hauling of a load took the greater part of the day and in bad weather it was necessary to return the following day.

"The saving in this item alone amounts to probably $1,000,000 a year to inhabitants of the city. The total amount of profits to Milwaukee from these good roads in reduced prices of farm products has not been figured out, but it would be easy to see that these profits must amount to a large sum."

MILWAUKEE AUTO SHOW PROVES GREAT SUCCESS.

The 12th annual automobile show in Milwaukee proved a decided success. There were 110 exhibitors, with 43 makes of passenger cars and 36 commercial cars. There were 36 exhibitors in the passenger car department and 33 in the truck division. There were 30 in the tire, accessory and supply department.

The show was held under the auspices of the Milwaukee Automobile Dealers, Inc., composed of 39 members, practically all distributors of passenger and commercial cars in the Wisconsin-Upper Michigan territory and dealers in Milwaukee and immediate vicinity.

There were motion picture performances, musical programs, style exhibits and other entertainments to supplement the show and afford additional enjoyment for the thousands of visitors. Two afternoons were devoted to dealers.

SHIPPERS' TRUCKING CO.

A charter has been granted in New York state for the Shippers' Trucking Co., Inc., Manhattan, New York City. The incorporators are A. G. Sherrer, W. Greene and E. M. Richman, 85 Liberty street. The capitalization is $10,000.

ROAD BUILDERS TO MEET.

The 16th annual convention of the American Road Builders' Association and the ninth American Good Roads Congress are to be held at the Hotel McAlpin, New York, Feb. 25-28.

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ENGLISH USE OF COAL GAS FUEL

Necessity of Experiments with Containers Retarded General Utilization—Development of Practical Equipment Has Resulted in Truck Operating Economy.

By Frank C. Perkins.



Motorcycle with Package Carrier Equipped with a Gas Container, as Developed by John Knape & Son, Ltd., Burnley, England, for Use During the Petrol Fuel Prohibition Period.

AN ACCOMPANYING illustration shows an English type of coal gas container for power trucks, developed at Burnley, England, by John Knape & Son, Ltd. The "Hargas" coal installation for light weight motorcycles may be noted in another illustration. This special gas container is constructed of very light three-ply wood with a flexible gas holder fitted inside. The latter is secured by press buttons all the way round the top. The filling arrangement is a tap with a teat end. There is a flexible metallic tube with two rubber ends supplied as filling pipe, and a flexible metallic tube with two rubber ends conveys the gas from the container to the carburetor. On the carburetor itself there is a neat arrangement whereby the air can be adjusted—worked from a lever on the top of the tank. The running of the motorcycle is extremely satisfactory, the whole outfit is well constructed and is neat in appearance. The box is painted black with suitable relief lines. It is attached to the carrier by an iron support bracket. Two bolts are secured to the box and these fit through the bracket and are finally secured by two wing nuts. A bracket is also made to fit on to the wing nut, which in the ordinary way secures the stand. The capacity is approximately 15 cubic feet of gas.

A coal gas system has been devised for Ford cars, there being no alteration required at the throttle control. The gasoline is turned off when running on gas and when necessary to revert the liquid fuel the flexible pipe is uncoupled, leaving the carburetor as before. In connecting the gas container in its tray with the Ford carburetor a special end has been made to replace the hot air tube.

Coal Gas a Practical Fuel.

It is pointed out that in England coal gas as a fuel for commercial vehicles has long since passed the experimental stage. It is today recognized as the most efficient substitute for petrol. It is giving excellent results in hard, everyday commercial use; and is a very satisfactory fuel from many points of view.

Motor vans and other commercial vehicles need not remain idle because of fuel shortage if fitted for consuming coal gas. No alterations of the engine are necessary, and the complete installation can be easily and quickly made in a few hours.

By converting the motor for the use of coal gas fuel a large saving is obtained. Use of coal gas at prevailing prices is equivalent to petrol at 12 cents to 18 cents per gallon, and every mile driven with coal gas means money saved. As a profitable commercial proposition—apart altogether from any national necessity of saving petrol, a coal gas outfit is desirable.

The use of coal gas as a motor fuel has been given the most careful attention by power vehicle engineers. After ceaseless experimenting and trials a method has been perfected, and with this equipment admirable results have been obtained.

More Than One Type.

Another type of motor vehicle container for coal gas has been developed by the British Rubber Manufactures, Ltd., at the Agnes works at Acton, near London, England. The demand for flexible gas containers, which was outstripping the supply, was by no means confined to any particular phase of the transporting world. They were urgently demanded for private cars, light express vans, small lorries, heavy vehicles—even motorcycles; in short, for every type of self-propelled traffic driven by internal combustion engines.

It is pointed out that previously the India rubber manufacturing industry had been unable to enter the producing field, but now, owing to rearrangement of organizations, it can devote sections of its



A Knape Gas Fuel Bag Installed on the Roof of a Truck Body, This Type of Container Being Practical Only When So Mounted Because of Its Size.

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extensive plants, labor and facilities to mass production of what is recognized to be an indispensable commodity.

The British Rubber Manufactures plant was available for producing fabric of the requisite quality—waterproof, shrunk, gas proof and immune from all tendency to laminate. The envelope constituting the container is made of two layers of pure rubber. The last named is applied to the foundation in successive coating, each about as thick as a cigarette paper, during the passage of the fabric through the steam heated machine.

Gas Bag Rubberized Fabric.

The application of pressure and heat insures the two super imposed sheets of fabric adhering firmly together, the rubber not only forming an inner layer, but also filling the pores in the foundation, thus creating a water proof surface for the exterior. The foundation is high grade, and its production and proofing are broadly similar to the manufacture of the familiar rubber sheeting. There is no need for the fabric to be unduly heavy so long as it possesses the requisite strength and is able to carry the desired layers of films of pure rubber, which, in this instance, are 12 in number.

On account of the pressure applied, in combination with the high grade of rubber used, it is difficult to pull the two sheets of fabric apart, at least without tearing, so that more than sufficient adhesion is assured to meet ordinary working conditions.

The British Rubber Manufactures favors the inverted D shaped section of bag, with the straight side conforming to the contour of the roof of the vehicle. Thus friction arising from riding or sawing action set up by the wind is reduced to the minimum. The seams are first sewn by heavy machines and are then covered with strips of rubber fabric vulcanized in place. The stitches are thus preserved from the corroding effects of moisture, while at the same time possibility of leakage is insured against.

Treated to Resist Sulphur.

To protect the rubber layer between the two walls of fabric from deterioration by the sulphur content in the gas the inner surface of the bag is treated to a final vulcanizing, which forms a perfect armoring. Upon completion the bag is treated to a pressure test inflation by air, this pressure being well in excess of the four ounces per square inch, which is the approximate pressure of the coal gas when the container is fully inflated.

The bag is left air inflated for 12 hours, which time is adequate to detect weak seams or other possible sources of leakage. One pronounced improvement is the longitudinal anchoring tab on either side of the bag. This tab is firmly sewn to the side seam, and subsequently vulcanized, is sufficiently strong to withstand any probable tension resulting from driving conditions.

Eyelets for the anchoring ropes are set equi-distant and vulcanized, so that an even anchoring strain is obtained for the bag throughout its length on either side. The containers are made any desired color to suit the finish of the vehicle so that its appearance is not unsightly.

The Means of Control.

The feed pipe, a one-inch perforated hose, with open mouth lying within the bag, is vulcanized in place and in communication with the orifice to which the feed pipe is attached. The feed pipe is carried down the front left side stanchion to the dashboard, and brought to a point convenient to the driver of the car.

Upon the dash is installed a three-way cock to which is attached the armored hose connection to the gas bag, the engine feed pipe and a short section of horizontal barrel running towards the edge of the dash respectively. This last named length forms the connection for charging up. When attached to the main and the cock is moved a free passage for the gas from the main to the container is afforded, communication with the engine being cut off. When the bag is filled another turn of the cock cuts off the connection between the charging end and the gas bag. To obviate escape of gas by the inadvertent movement of the gas cock the charging pipe is sealed with a cap.

It may be stated that the engine fittings are simple, a one-half inch barrel with elbow joints (all fittings are standard gas barrel, joints and unions) is run from the three-way cock to the motor, the induction manifold being tapped abaft the carburetor, so as to bring the gas feed as near as possible to the inlet valves. Between the dash and the induction manifold a valve is introduced, this being connected to the ordinary carburetor throttle operated by the accelerator pedal. Thus control of the gas and air is secured.

By this control it is possible to run the vehicle on either coal gas or petrol, and to change from one fuel to the other as desired without making the slightest adjustment beyond a turn of the gas tap on the dash, to prevent the petrol vapor entering the gas bag and to obviate any mixture of the two gases. The British Rubber Manufactures has developed facilities to produce coal gas containers. A large staff of girls has been trained to cut out the bags, while a battery of sewing machines is used for sewing operations. The facilities available can produce 80 containers a day, but this can be increased considerably. Statement is made that there is no probable shortage of essential raw fabric. Containers are made to specified dimensions for each vehicle. For the assistance of private owners converting their machines to burn coal gas fuel, and for small garages in the provinces, a measurement form has been prepared.

This plant at Acton has facilities to equip vehicles and charge containers ready for driving away within five or six hours. The company has designed a container for any class of vehicle, to which the system can be applied, up to 250 cubic feet capacity.

The Keys-Power Sales Corporation, Yonkers, N. Y., has been incorporated with $35,000 capital by M. L. Sinsabaugh, T. A. Power and G. F. Keys, Yonkers, and will carry on an automobile business.

TRUCK DRIVERS' SCHOOL IS OPENED BY PACKARD CO.

The Detroit branch of the Packard Co. has opened a truck school for drivers and prospective drivers of all makes of trucks. The object is to counteract the effects of neglect and poor driving and at the same time educate the truck driver to a higher standard of efficiency in operation.

Attendance has averaged more than 100 at each weekly meeting, held Wednesday evenings, and at each session a subject previously announced on the season's program is covered thoroughly. A complete truck and all its parts are on display and their care and functions are explained minutely by experienced service men, after which the students themselves ask questions or contribute information from their personal experience. Moving pictures showing the construction of trucks in the factory have been a feature of the entertainment.

Other subjects to be taken up in succession are construction and operation, steering and general chassis assembly, motor adjustments, inspection, general operation, etc. The growing interest shown by the drivers has been a revelation to the promoters of the school, for in the past, particularly during war time, the average driver was somewhat apathetic on the subject of truck upkeep.

Most of the students are entered in the truck national efficiency test, which began Feb. 1, and is to run through a whole year in order to cover all weather conditions and all phases of motor transportation.

HELPFUL ADVICE IS GIVEN TO OWNERS OF TRUCKS.

Duplex Doings, published by the Duplex Truck Co., recommends these resolutions for truck owners:

"I will see that my truck receives intelligent care and attention.

"I resolve I will not place my $4000 investment in the hands of a $2 a day man.

"I will remember that the Duplex Truck Co. can make good trucks, but they cannot put brains in the drivers' heads.

"Furthermore, I promise to see that my driver keeps all nuts and connections tight, oils and greases truck thoroughly at frequent intervals, changes wheels from front to rear every thousand miles, avoids overloading and religiously observes the speed limitations established by the manufacturer."

VOGLER DISTRICT SALES MANAGER FOR SERVICE TRUCK.

Following his discharge from the army, Capt. H. J. Vogler became district sales manager for the Service Motor Truck Co. in the district which includes Maryland, Virginia, the Carolinas and the District of Columbia. Before entering the army he was wholesale manager for Willys-Overland and also had charge of the dealer organization in the East. At one time he was eastern superintendent for the Maxwell Motor Co.

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ACME DISTRIBUTORS AT FACTORY CONFERENCE.

A conference of distributors of Acme trucks was recently held at the factory at Cadillac, Mich., at which Sales Manager C. J. Helm and the other officials of the company presented the selling plans as determined for the reconstruction period and the visitors learned first hand of the qualities of the new five-ton Acme truck chassis. There were several social events of interest during the visit of the agents, and the photograph from which the accompanying illustration was made was taken. From right to left, beginning at the top, the group consisted of: A. W. Young, Pittsburgh, Pa.; J. A. Bell, Atlanta, Ga.; J. W. Baker, Columbus, O.; J. R. Brigham, New York City; J. E. Bowles, San Francisco, Cal.; George T. Gould, Boston, Mass.; F. P. Walker, Omaha, Neb.; Fred J. Vandemark, Chicago, Ill.; J. C. Benedict, Greensboro, S. C.; J. W. Felix, Dallas, Tex.; H. A. Cavanaugh, Kalamazoo, Mich.; Wm. F. Martin, Indianapolis, Ind.; Wm. T. Fulton, Dallas, Tex.; E. K. Callahan, Buffalo, N. Y.; H. L. Brown, Denver, Col.; E. C. Hanes, Ft. Wayne, Ind.; Edward Brehm, Brehm-McMullen Co., Minneapolis, Minn.; C. J. Helm, sales manager, Cadillac, Mich., and G. M. Rockwell, Rochester, N. Y.

FULLER PLANS MODERN PLANT.

At the annual meeting of the Fuller & Sons Manufacturing Co., Kalamazoo, Mich., it was voted to tear down the old shop and replace it with a modern building, the same type of construction as used in the two additions during the last five years. The building proposed would be four stories high and 156 feet long, constructed entirely of concrete, steel and brick. It will give a continuous main building 434 feet long, four stories high, with a floor space of more than 125,000 feet. The company has taken on 150 men during the last two months, and now has 477 on the payroll, the weekly pay being in excess of $11,000.

These officers were elected: Directors, F. D. Fuller, W. P. Fuller, L. C. Fuller, Dr. W. E. Upjohn, S. N. Bickerstaff; president, F. D. Fuller; vice president, L. C. Fuller; secretary, W. P. Fuller; treasurer, Dr. W. E. Upjohn.

WALTER H. STROM SUCCUMBS TO INFLUENZA.

Following closely the death of his wife and a little son, Walter H. Strom, president and general manager of the U. S. Ball Bearing Manufacturing Co., died after suffering from influenza, which also caused the death of the wife and child. He was the son of A. A. Strom, who has been the active head of the company since its formation.

SIDWELL SUCCEEDS BLAND.

E. V. Sidwell has succeeded the late Edward G. Bland of Detroit as manager of Fulton Motor Truck Co. of Michigan. He was formerly assistant to Mr. Bland.

SECOND PACKARD TEST FOR TRUCK EFFICIENCY.

Trucks taking part in the second Packard truck efficiency test, which started Feb. 1, are divided into seven classes, as follows: Class A, all six-ton trucks; class B, all five-ton trucks; class C, all four-ton trucks; class D, all three-ton trucks; class E, all two-ton trucks; class F, all 1½-ton trucks; class G, all one-ton trucks.

Total prizes amount to $17,600 and include five awards for drivers, from $100 to $500; five prizes to accountants, from $25 to $125, and five prizes to shipping clerks, from $40 to $225.

Contestants must furnish cost and operating records on standard forms of the National Standard Truck Cost System.

BEGIN PRODUCTION OF TRANSPORT TRUCK.

The Transport Motor Truck Co., Mt. Pleasant, Mich., has begun production. There are more than 500 orders on hand. One model only will be turned out for the time being, a 2½-ton, having 150-inch wheelbase, with Continental motor, Fuller clutch and transmission, Stromberg carburetor, Jacox steering gear, Prudden wheels, Columbia front axle and Clark rear axle. Milton A. Holmes is president of the new company.

RESTRICTIONS ON PNEUMATIC TIRES REMOVED.

The Automobile Chamber of Commerce announces that at a joint meeting of committees representing tire and automobile manufacturers, it was decided that all restrictions that had been adopted as a war measure on the manufacture of certain sizes and styles of pneumatic tires for renewal purposes would be removed and that tires of all sizes would be made as long as there is a demand for them by the public.

HAWKINS LEAVES FORD.

Norval A. Hawkins, general sales manager of the Ford Motor Co., has resigned, and it is announced that he will hereafter devote his attention to his personal business interests. In 1904 Henry Ford asked Hawkins to put the new plant, which was about one year old, on a systematic basis, both in shops and in office. At that time Ford was probably less known in Detroit than Hawkins, who had a reputation of being one of the best certified public accountants in Detroit.

At that time there was not even a drawing or blue print of the Ford model, which was destined to make the name of its builder famous the world over. At that time there was, however, a Ford car, a six. Mainly due to Hawkins' suggestions, Ford abandoned the building of the sixes and concentrated on making fours in just one model, but in a few different styles of bodies.

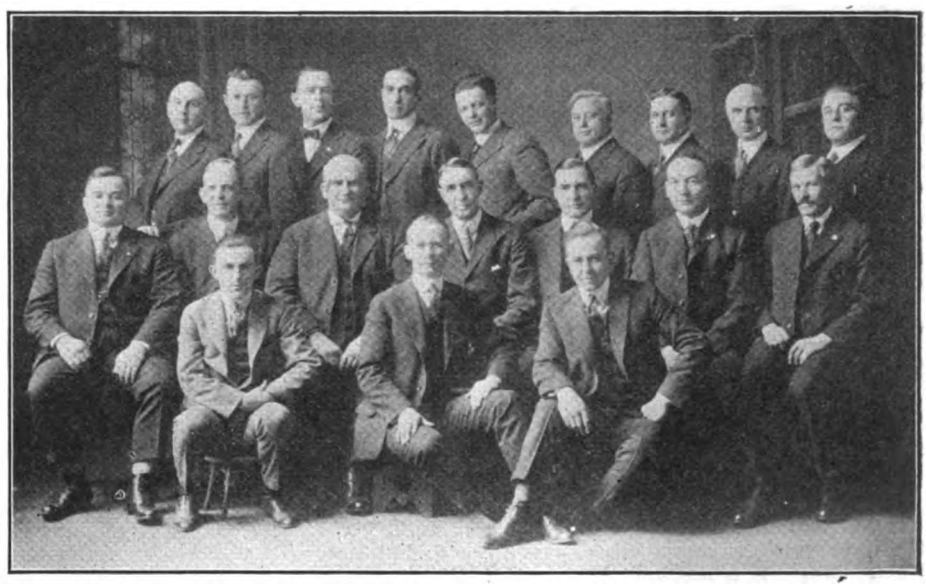
In 1907 Hawkins, who had continued in special work for the company, became commercial manager of the concern, the title being later changed to that of general sales manager. Credit for much of the success of the Ford company is given to him.

The government had Mr. Hawkins assist in the administration work of the motor branch of the Detroit district, which was under the direction of Gen. Goethals, during the war.

LAHATTE A SELDEN DISTRICT SALES MANAGER.

Milner T. LaHatte, who has been assistant to Division Sales Manager C. M. Snow in the southern territory for the Selden Truck Sales Co., Rochester, N. Y., will, March 1, succeed Mr. Snow in the southern territory as division sales manager, with headquarters at Atlanta, Ga.

Mr. Snow's advancement in the Selden organization enables Mr. LaHatte to step into the position formerly held by Mr. Snow.



A Group of the Distributors of Acme Trucks in Attendance at a Conference at the Factory at Cadillac, Mich.

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SAN ANTONIO AUTO SHOW A BIG BUSINESS PULLER.

The "half million dollar automobile and fashion show" in San Antonio, Tex., went off big. Visitors came from all parts of the state, nearby states and from Mexico. Seventy-five thousand persons attended. Many sales were made. It was the fourth annual automobile show. Sixty dealers exhibited 350 cars, trucks and accessories. Great publicity was given to the event.

WISCONSIN MOTOR MFG. CO. HAD PROSPEROUS YEAR.

The Wisconsin Motor Manufacturing Co., Milwaukee, Wis., had sales of more than $5,700,000 last year. The Wisconsin engines were used in the Mexican campaign and in the military trucks of Great Britain and the United States. The company is now selling $800,000 preferred stock at par. There is $1,000,000 common stock, with a market value of $1,500,000.

INCREASED PRODUCTION PLANNED BY CONTINENTAL.

The Continental Motors Corporation, Detroit and Muskegon, Mich., has adopted a 1919 schedule which provides for increased engine production of between 15 and 25 per cent. over last year's output. The two plants produced approximately 180.000 engines last year, many of them for the government.

GREAT WESTERN TRUCK BODY CO. LEASES PLANT.

The Great Western Truck Body Co. recently formed to make truck bodies and accessories at Omaha, Neb., has leased four large buildings of a distillery. It is planned to have 75 men at work by March. W. G. Shipley is president, Charles Dundy secretary and C. O'Brien manager.

HENRY NOW VICE PRESIDENT OF MAXIM CORPORATION.

H. H. Henry, formerly president of the Dart Motor Truck Co., is now vice president and general manager of the Maxim Munitions Corporation, 120 Broadway, New York City, and will direct the work of marketing Maxim tractors along the Atlantic seaboard and abroad.

WHITE ADVERTISING DEPARTMENT MOVES.

The White Co., Cleveland, O., announces the removal of the advertising department from the factory administration building to the Union building, 1836 Euclid avenue, fifth floor.

COMMERCE TRUCK CO. ENDING WAR WORK.

The Commerce Motor Truck Co., Detroit, is now running 15 commercial trucks daily. It is finishing its war contracts and is now 50 per cent. on commercial production.

INDIANA DISTRIBUTOR FOR PARKER TRUCKS.

The Parker Motor Truck Co., Milwaukee, Wis., has made agency contract with the Hamilton-Whittaker Co. of Indianapolis, Ind., for the sale and distribution of Parker trucks. The company is well financed, has capable executives, a good sales force, a well equipped service station and a well established business.

The Parker Motor Truck Co. will hold a sales convention Feb. 24 at Milwaukee.

BOLLSTROM WILL LOCATE AT ST. LOUIS.

The Bollstrom Motors Co. has been organized to build trucks and will have a factory in St. Louis, Mich. The new type of four wheel drive trucks will be made. Buildings have been planned and it is expected that when the plant is in full operation there will be about 2500 employees. Men who have been associated with prominent truck manufacturers are said to be interested in the new concern.

WILLIAMS SALES MANAGER FOR GRANT TRUCKS.

The Grant Motor Car Corporation announces the engagement of Birkett L. Williams as sales manager of its truck department. Mr. Williams comes to the position with a comprehensive knowledge of truck merchandising gained through a large experience in both domestic and foreign fields.

SUCCEEDS CHARLES C. McKINNEY SERVICE.

The McKinney Co., advertising, has succeeded the Charles C. McKinney Service of Chicago. Officers of the McKinney Co. are: President, C. C. McKinney; vice president, O. D. McKinney; secretary, L. J. Sholty. The company has taken additional space and new quarters at 58 East Washington street, Chicago.

CANADIAN PLANT FOR CLYDESDALE TRUCKS.

A plant, at 73-81 St. Paul street, Toronto, has been established by the Clyde Car Co. of Canada for assembling and distributing Clydesdale trucks. The trucks are being made in accordance with the specifications of the British war office subsidy plan.

WANT S. A. E. TO MEET IN DETROIT.

Officials of the Detroit Section of the Society of Automotive Engineers and officers of the Detroit Automobile Club are endeavoring to have Detroit selected as the place for the mid-summer meeting of the Society of Automotive Engineers.

DISTRIBUTOR FOR SIGNAL TRUCKS.

The R. E. Taylor Corporation, New York City, has become distributor for the Signal Motor Truck Co., Detroit, in New York state, western Connecticut, New Jersey, Pennsylvania, Maryland and District of Columbia.

GOODYEAR FOREMEN'S SCHOOL.

The Goodyear Tire and Rubber Co., Akron, O., conducts a foremen's school, the aim of which is to make better executives of these men. Improvement of department organization, development of better methods of handling routine business, how to read charts, a larger acquaintance with sources of supplies of raw materials, etc., are among the subjects being studied. Lectures are also given on popular subjects, labor policies and personal health.

PACKARD PRICES REMAIN SAME.

The Packard Motor Car Co., Detroit, announces that there will be no change in the present prices of Packard cars and trucks. A statement issued by the company states: "Packard prices are based on cost of material. There was no rise in Packard prices during the war period based on what the traffic would bear. There is no lowering of quality and consequently no leeway for reduction of price at this time."

LARGE CAPITAL TO MAKE RADIATORS.

A charter has been filed in Delaware for the Mountain Biloop Radiator Co., to manufacture boilers, radiators, valves, etc., with capitalization of $2,500,000. V. B. Vaux, J. B. Stauffer, V. B. Stauffer and Clayton S. Billinger, all of Lancaster, Pa., are the principals.

AFTER-THE-WAR PUBLICITY.

George H. Bryant and Bruce Farson are now at the service of the automotive industry for after-the-war business reconstruction in the handling of advertising and sales campaigns as members of John G. Robel, Inc., 58 E. Washington street, Garland building, Chicago.

WARD LAFRANCE PRICES.

Beginning Feb. 1 the prices of the Ward LaFrance motor trucks, manufactured by the Ward LaFrance Truck Co., Inc., Elmira, N. Y., are: Two-ton, $3350; 3½-ton, $3750.

UNITED STATES RUBBER DIVIDENDS.

The United States Rubber Co. has declared its regular quarterly dividends of two per cent. on first preferred and 1½ per cent. on second preferred stock.

NEW GEAR CORPORATION.

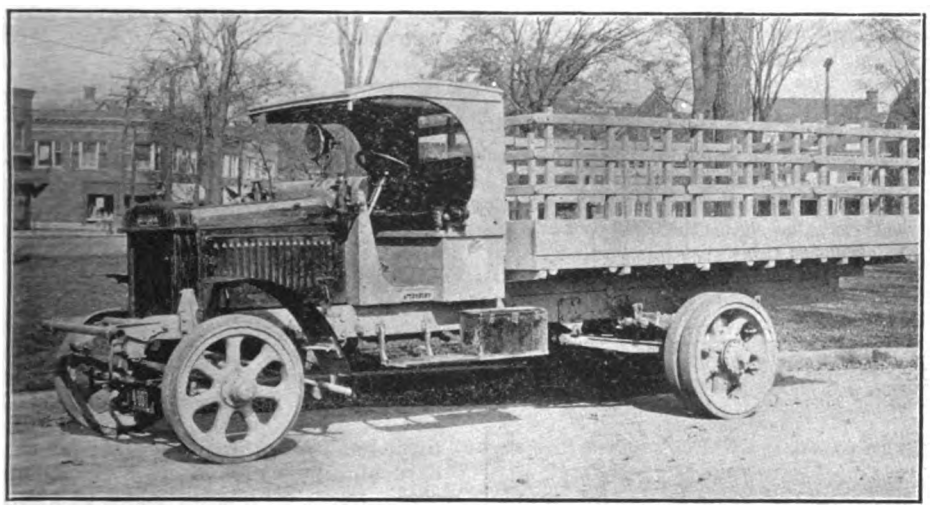
The Meachem Gear Corporation, Syracuse, N. Y., has been chartered in New York state by J. F. Sabine, T. W. and T. G. Meachem, Syracuse, with $300,000 capitalization.

Judson M. Sells has joined the Commerce Motor Car Co.'s sales force in the Buffalo territory. He has been general manager of the Northern Steamship Co.

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ATTERBURY TRUCKS IN FOUR SIZES

Latest Unit Rated at Five Tons, an Example of Advanced Engineering, Having Many Exclusive Features—Carefully Developed Owners' Service by Dealers



The Atterbury Latest Chassis, Five Tons Capacity, Equipped with Steel Wheels and Platform Body with Rack Sides.

"WITHOUT a superior" is the claim made for the quality of Atterbury trucks by the Atterbury Motor Car Co., Buffalo, N. Y., the builder, a concern that has been actively engaged in the industry for more than 12 years, all of this period producing trucks exclusively. The company has, during its existence, built different sizes of trucks, but for a considerable period it has manufactured a series of three units with load ratings of 1½, two and 3½ tons, and it has just begun the commercial production of a fourth, which has five tons capacity.

The claim for quality for Atterbury trucks is based upon the construction units used in the first instance, and upon the extremely careful engineering of the designs. The trucks are built of the products of specialists, that have been carefully developed by long continued laboratory and service experience by organizations of qualified experts, and which have been proven by use in all kinds of operating conditions. The qualities that are demanded by truck owners have all been considered in the designing and construction of these units—simplicity, accessibility, endurance, ease of adjustment and repair in the event of wear or accident, and economy of operation. Practically every factor that is essential to high grade construction has been carefully worked out as a business proposition, and perfected so far as there has been possibility of obtaining practical results.

Scientific Atterbury Engineering.

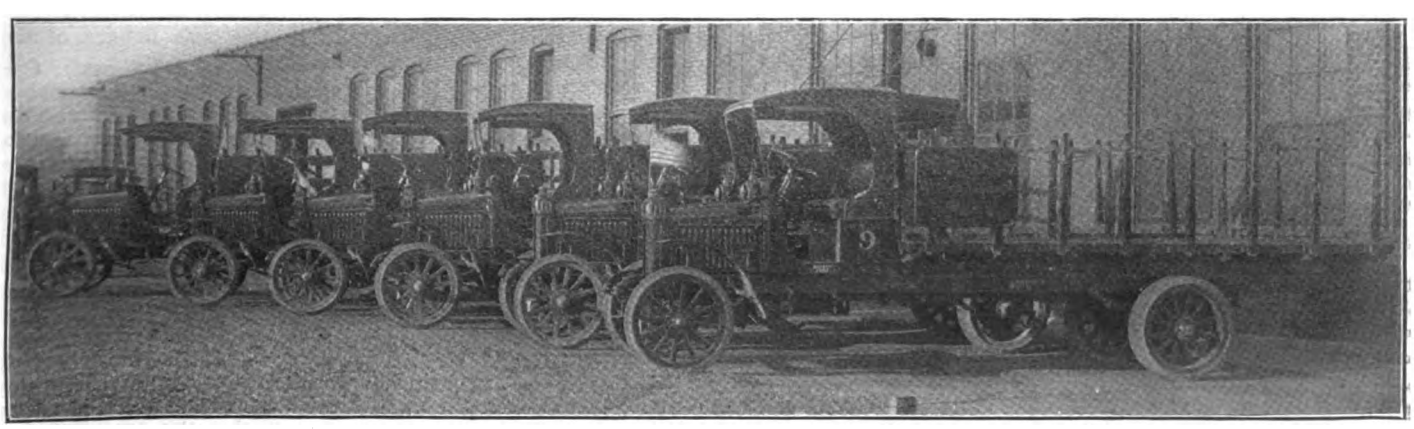
The assembling of these units has been the work of the Atterbury engineers, and the purpose has been to obtain what may be termed a uniform construction, so that there should be no weaknesses and no defects, and that the truck owners would realize economical use when regarded from the viewpoint of utility, operating and maintenance expense, and service life. The Atterbury policy has been to standardize a design and to build all its trucks to this, the only difference in the vehicle units being the proportions of parts to obtain the desired factors of safety for the rated capacities.

This policy has been adhered to in the present series, although there has been one change in the power transmission system, the transmission gearset of the five-ton truck being located amidships instead of being combined with the engines and clutches in unit power plants, as in the three smaller chassis. Like many other truck builders the demands of the United States government for vehicles for army service reduced the commercial production during the war very greatly, but now the company has completed its contracts and can distribute its entire output ot its sales organization and can make deliveries as scheduled by contract. The company has also been extremely active since the conclusion of hostilities with developing its dealer representation, and it has inaugurated an intensive campaign in the eastern section of the country. Some of the best known concerns in the automotive trade are now its agents, and agency contracts have been influenced by the character of service that could be afforded, for the company has been insistent that buyers of Atterbury trucks shall have service at their command that will be satisfactory to the most exacting owner.

Construction Units Made by Specialists.

The claim of the company for quality of construction unit is based upon the general knowledge of the public of Continental engines, Long radiators, Eiseman magnetos, Zenith carburetors, Pierce governors, Brown-Lipe clutches, Brown-Lipe transmission gearsets, Spicer universal joints and shafts, Timken worm drive rear axles, Timken front axles, Spring Perch springs, Hydraulic frames and Archibald wheels, for all of these components are included in Atterbury machines, the only exception being that steel wheels are used instead of wooden for the five-ton chassis. The quality of the vehicles as assemblies may be judged from the detail which will be presented.

The wheelbase of the 1½-ton chassis is 140½ inches, of the two-ton chassis 153½ or 171½ inches, of the 3½-ton chas-

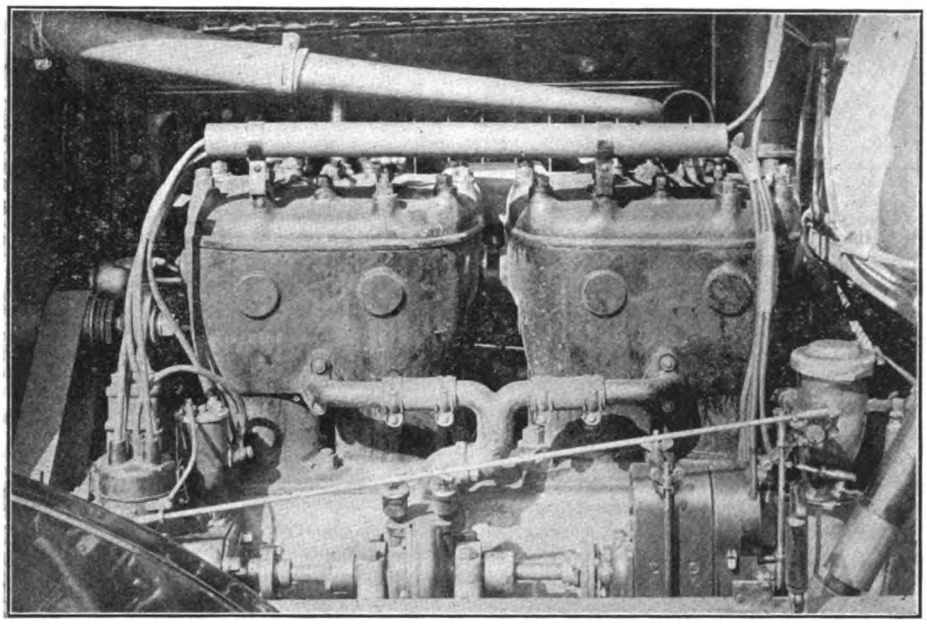


Typical Fleet of Atterbury Trucks, This Being Operated by the Erie Service Co., Buffalo, Engaged in General Trucking and Scheduled Freight Haulage in That City and Suburbs.

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sis 167½ and 192 inches, and of the five-ton chassis 167½ inches. The treads of the chassis in the same order are 58 inches front and 58½ inches rear, 58 inches front and 60½ inches rear, 66 inches front and 67¼ inches rear, and 64 inches front and 69½ inches rear. The chassis weights in the same order are 4770 pounds, 5260 pounds, 6910 pounds and 9635 pounds. The 1½-ton chassis has 36 by 3½ inch tires forward and 36 by five inch tires rear; the two-ton chassis has 36 by four inch tires forward and 36 by four inch dual tires rear; the 3½-ton chassis has 36 by five inch tires forward and 40 by five inch dual rear, and the five-ton chassis has 36 by five inch tires forward and 40 by six inch dual rear. The maximum speeds of the chassis in the order given are 15, 15, 13 and 11 miles an hour respectively.

The engines of the 1½-ton and the two-ton chassis have cylinder bore of 4⅛ inches and stroke of 5¼ inches, these being rated at 27.25 horsepower by the S. A. E. formula. The engine for the 3½-ton chassis has cylinder bore of 4½ inches and stroke of 5½ inches and is rated at 32.40 horsepower, and the engine for the five-ton chassis has cylinder bore of 4¾ inches and is rated at 36.10 horsepower. Claim is made, however, that these engines will develop 34.50, 42 and 50 horsepower. This statement is made to establish that the trucks have ample power for any requirement. The cylinders for the engines of the two smaller chassis are cast en bloc, but those of the two larger chassis are cast in pairs.



Left Side of the Engine of the Five-Ton Atterbury Chassis, Showing the Magneto and Distributor for the Double Ignition System and the Flexible Connections of the Water Pump to the Intake Manifold.

The Five-Ton Chassis.

For the purpose of description the five-ton chassis has been selected as the latest production of the company, but the details wherein it differs from the smaller chassis will be stated. The engine, according to the claims of the builder, will develop 50 horsepower at 1025 revolutions a minute, which is the governed speed. It is a four-cylinder, four-cycle, water cooled, L head, vertical type, the cylinders being cast in pairs from a special grade of reverbratory air furnace iron with the water jackets integral. The cylinder heads are cast separately.

The detachable head insures the water chambers being clear of obstructions and the walls are of uniform thickness, this making for efficiency of cooling and lubrications. The valves and the spark plug bores are surrounded by generous water chambers and there is a certainty of a flow of water across the cylinder heads to the outlets to the radiator. These heads are retained by series of studs. The valves are at the right sides of the units.

The base flanges of the units are heavy, affording substantial seats for the valve tappet guides and for the retaining bolts, and beneath the valves are webs that are the seats for the cover plates that enclose the valve mechanism, which are secured by easily removable nuts. The cylinder units are carefully tested for defects, are rough bored and machined, aged to obviate machining stresses and finish bored and again tested, after which they are ground to dimensions.

The pistons are cast from the same material as the cylinders and after being turned and machined they are ground to size. Each piston is channeled for three concentric rings, which are fitted with much care to obtain accuracy, and grooves are cut in them below the rings to collect and distribute the lubricant on the walls of the cylinders.

Two-Section Aluminum Crank Case.

The crank case is cast in two sections from aluminum, the upper half being heavily webbed to carry the main bearings, and it is divided by a central vertical transverse web. The upper section contains the crankshaft, the camshaft, all bearings and the timing gearset. The lower section is the base of the crank chamber and the oil reservoir, and this also carries the oil pump and its connections. The two sections are bolted together and the lower section may be removed whenever necessary to examine or adjust the main or connecting rod bearings. The housings for the timing gearset and the flywheel are cast integral with the sections as forward and rear extensions.

The crankshaft is drop forged from a special alloy steel with the flywheel flange and thrust flanges at either side of the center main bearing integral. The shaft is a three-journal type, the front journal being 2⅜ inches diameter and the center and rear journals 2½ inches diameter, and these in the same order are three, four and four inches length, a total bearing length of 11 inches. The crankpins are 2⅜ inches diameter and three inches length. The shaft is machined, heat treated to have tensile strength of 90,000 pounds to the square inch and ground to dimensions.

The camshaft is drop forged from a single piece of low carbon steel with the cams integral, and this is a three-journal type, the journals from front to rear being respectively 2¼, 2⅛ and two inches diameter, and in the same order 2⅛, 1¾ and 1⅜ inches length. The shaft is first turned and after heat treatment for case hardening it is ground on a special machine, much care being taken to obtain cam accuracy.

Other Engine Detail.

The connecting rods are drop forged steel I sections that are heat treated. The timing gearset gears are large diameter and width and are helically cut, much care being taken to obtain accuracy of gear centers. The operation is said to be practically noiseless.

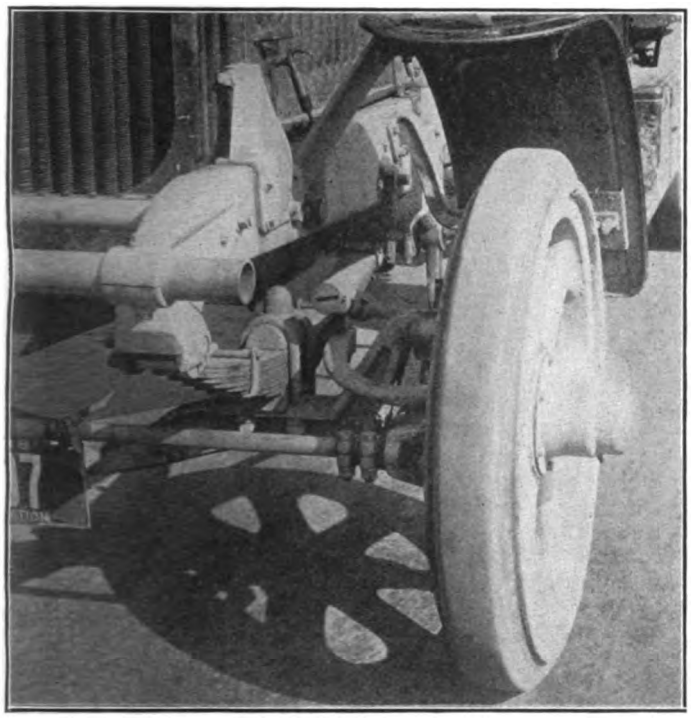
The main, crankpin and camshaft bearings are high grade nickel babbitt, the first two being mounted in bronze cages, and they are adjustable with shims. The main bearing caps are retained by through bolts and the connecting rod caps are retained by four nickel steel bolts each. The wristpins are annealed steel tubing, hardened and ground to size. The small ends of the connecting rods oscillate on bronze bushings on these pins, the pins being secured in the piston bosses.

The valves are 2⅜ inches diameter, with nickel steel heads electrically welded to carbon steel stems a half inch diameter, and these operate in long guides. The valve tappets are a mushroom type, fitted with adjusting screws and lock nuts that are carried in renewable guides in the base flanges of the cylinder units.

Lubricating and Cooling Systems.

The engine is lubricated by a full force feed system. The oil ducts are cast in the crank case sections. The lubricant is drawn from the screened well in the oil reservoir and carried through the ducts to the main and camshaft bearings and the timing gearset by a gear pump, and through channels in the crankshaft to the crankpins and the connecting rod bearings. The oil distributed by the centrifugal movement of the crankshaft to the cylinder and piston walls, the wristpins, the cams and valve tappets. The drainage flows to the oil reservoir under the crank chamber. The flow of lubri-

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Left Forward End of Five-Ton Atterbury Chassis to Show the Heavy Spring Horn, the Mounting of the Bumper and the Special Built Radiator.

cant in the system is indicated by a sight gauge so located on the dash that the driver always has a clear view of it. The complete oiling system, pump, screen, etc., can be drained and cleaned without further dismantling the engine.

The engine is cooled by a circulation of water through the engine jackets forced by a centrifugal pump, and through a large vertical tube radiator. The side columns and the top and bottom tanks are cast aluminum and the core is made up of copper tube with helical fins soldered to header plates, and it has a frontal area of approximately 1200 square inches radiating surface. The capacity of the system is 10½ gallons.

This radiator is mounted on trunnions of the ball and socket type that are suspended between helical springs that effectually protect it against vibratory and chassis distortion stresses. Radiation is promoted by a large fan on a ball bearing on an adjustable bracket that is mounted on the forward cylinder unit, and driven by a flat belt from a pulley on the extension of the water pump shaft. The pump is connected to the water inlet manifold of the cylinder units by flexible hose connections secured by clips, this being a protection against breakage and makes for greater accessibility. The water pump is large and has the usual provision for drainage in cold weather.

Dual Ignition System.

The ignition system is a combination dual type, this being possible from the electric lighting equipment of the truck. This requires two sets of spark plugs. The source of current for one set of plugs is an Eisemann waterproof high-tension magneto at the rear of the left side of the engine crank case that is driven by a flexible coupling on the end of the water pump shaft, this having a variable spark advance, the lever being on the steering wheel.

The magneto is also equipped with an impulse starter so that the engine may be started with minimum effort and with a single turn of the crank. The current for the other set of spark plugs is supplied by a distributor mounted at the left side of the front end of the engine from a special truck type Willard battery mounted on springs in a compartment under the driver's seat.

The distributor is driven off the pump shaft by spiral gears and the current is transformed by a coil. The distributor is coupled to a special cross shaft that is automatically advanced or retarded by the advance or retard of the manual control of the magneto. Both plugs fire in each cylinder at the same time so that there is certainty that the fuel will be ignited, and there is more complete combustion. Both ignitions are controlled by a single point switch located on the dash, on a circular panel that carries the electric light switch and the ammeter indicating the voltage of the current generated by the generator mounted at the right side of the engine and driven from the timing gearset. The battery is thoroughly protected and is easily accessible.

The fuel is supplied from a 30-gallon tank under the driver's seat through a vacuum system to a Zenith carburetor, and the speed of the engine is automatically controlled by a governor in the intake manifold. The governor is a centrifugal flyball type, driven by spiral gears contained in a housing cast integral with the timing gearset housing cover, that is sealed after adjustment to the maximum speed fixed for the truck.

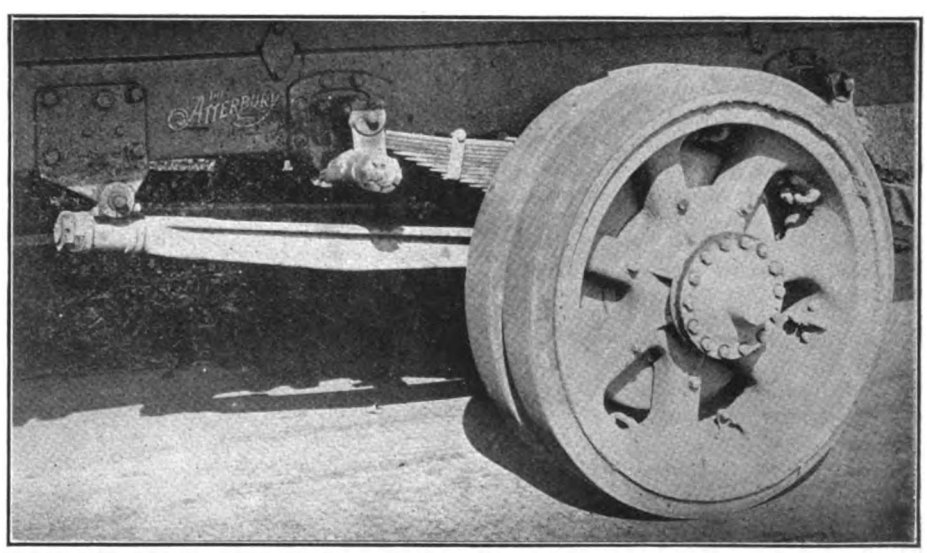
The Power Transmission System.

The engine is mounted at three points, on a forward trunnion in a yoke, and arms on the frame side members. The multiple dry disc clutch consists of eight driving and eight driven plates, each faced with asbestos fabric, and it is enclosed in a housing that is water and dust tight. The clutch requires no adjustment and it is claimed to be very efficient and easy engaging. The clutch shaft extends to the main shaft of the transmission gearset, which is suspended amidships, having one universal joint. The gearset is mounted at three points, at the front end by a large circular straddle, and at the rear by brackets and oversize nickel steel bolts. The straddle support is bushed with phosphor bronze.

The transmission gearset is a sliding gear selective type, having four forward speed ratios and reverse. The shafts are large and are mounted on Timken roller bearings and the gears are nickel steel, carbonized, hardened and heat treated, with 1½ inch faces. The gear ratios give the following in miles an hour: Low, 2.37; second, 4; third, 7.62; direct, 11.5, and reverse, 2. The buyer has the option of slightly lower ratios with low at two miles and direct at 9.75 miles, with reverse 1.62.

The drive from the gearset to the Timken full floating worm shaft and worm wheel rear axle is by a tubular shaft with a universal joint at either end, the tube diameter being 2½ inches. The joints are contained in grease tight housings. The rear axle is fitted throughout with Timken roller bearings. The axle housing is a single casting. The front axle is a steel drop forged I section, four inches deep, with 2½ inch webs, that has very heavy steering knuckles and the wheel spindles and the knuckle pivots are fitted with Timken roller bearings. All moving parts are equipped with grease cups.

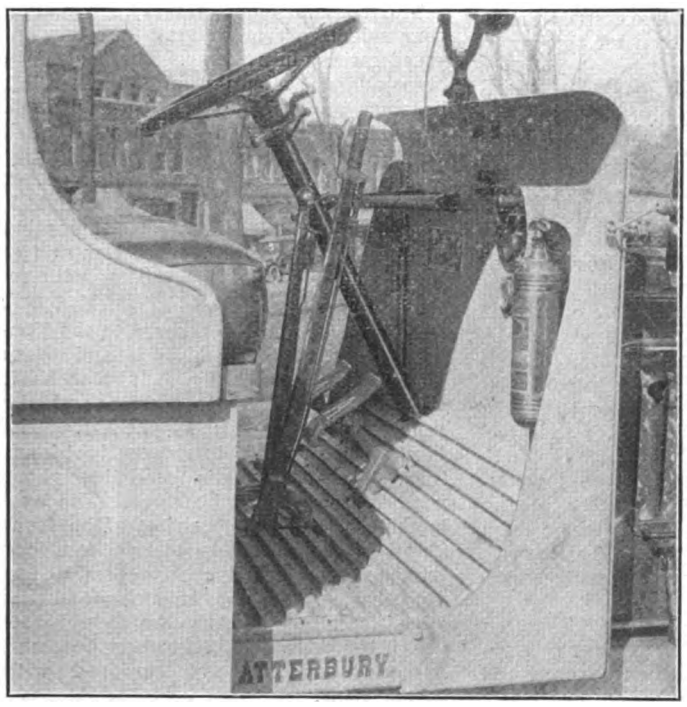
The frame is decidedly an Atterbury design. The members are hydraulic



Rear Side Section of Five-Ton Atterbury Chassis—Note the Spring and Radius Rod Hangers and the Bolted Assembly of the Frame, the Webs Not Being Cut or Drilled.

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pressed steel channel section 8 15/16 inches depth with webs 3½ inches wide, of quarter-inch stock, the total length being 263 inches. The forward spring horns are substantial steel castings. The cross members are Shelby steel tube through which eat treated chrome nickel steel bolts extend. There are seven of these members, including that which extends between the forward rear spring hangers, and while the frame is securely tied it is free to weave or yield to stresses of road inequalities without resistance that would result in breakage of a rigid frame. Claim is made that this construction absorbs a very large part of the strains that would be transmitted to other construction units with a different type frame. The frame side rails are special carbon manganese steel of exceptional toughness. There are no rivets used in assembling the frame and the webs are not drilled. Every part is assembled with standard S. A. E. bolts and nuts, so that there can be no shearing of rivets nor holes enlarged by wear.



The Curved Steel Dash of the Five-Ton Atterbury Truck, Strongly Braced, the Control Members and Instrument Panel, and the Heavily Cleated Footboard.

The frame is suspended on four semi-elliptic springs, the front set being 41½ inches long and three inches wide, with nine leaves, and the rear set 54 inches long and four inches wide with 18 leaves. The front leaves are held by one binding bolt, and around the centers of the rear springs bands of soft iron are shrunk which securely retains them. The spring shackle bolts are oversize, of nickel, hardened and ground, and are supplied with lubricant by felt wicks, so that lubricant is only necessary after each 500 to 1000 miles of driving.

Other Chassis Construction Details.

The chassis are equipped with steel wheels regularly, these having seven spokes each. The wheels are hollow and are comparatively light. The steering gear is a heavy worm and gear type with a 20-inch hand wheel. All steering connections are hardened and ground and the worm and gear are forged integral with their shafts. Ball thrust bearings at either side of the worm minimize friction. The gear is contained in a heavy housing that is packed with grease. The gear is adjustable. The steering column is at the left side. The linkage is very heavy, the tie rod being in front of the axle.

The control is by the conventional foot pedals for the service brake and clutch, a foot accelerator, ignition and throttle levers on the steering wheel, and gear shifting and emergency brake levers in the center of the footboard. The brakes are the Duplex, both sets of shoes expanding within drums on the rear wheels. The shoes are faced with an anti-friction material that may be easily renewed when worn. The brake drums are 24 inches diameter. All parts subjected to wear are bushed with bronze and all brake shaft bearings are fitted with large grease cups.

The brake rods are ½ inch diameter and have fixed yokes at one end and adjustable yokes at the other. The brakes are adjusted by turning a large hand wheel at the end of a special adjusting clevis at the rear end of the intermediate brake rod. By adjusting this clevis the brakes are tightened or loosened. There is a special equalizer mounted on the rear rocker shaft of the brake linkage and this insures that uniform pressure is exerted in clamping the brake shoes on the brake drums.

The dash is constructed of heavy sheet steel, to which the hood ledge, the side board and the toe board angle are spot welded. The dash is very substantial and the steering column is braced by a horizontal member that extends from it to the dash. On the dash are the oil gauge, the switch panel and a fire extinguisher. The seat base is built of wood, but the ends and one side are formed of heavy sheet metal. The front is wood. Under this the 30-gallon fuel tank is mounted on a special cradle.

The equipment consists of high grade electric dash lamps and tail lamp, tool box, tools, over-size jack, skid chain hooks on the rear wheels and skid chains, mechanical horn, a fire extinguisher, a motometer and a special tubular bumper besides the cab or driver's seat, fenders and running boards.

The policy of the Atterbury Motor Car Co., with reference to owners' service has been to have representation by concerns well established and with facilities to meet any demand upon them. This is for the purpose of insuring buyers of trucks that they will be protected so far as it is practically possible to protect them to obtain the greatest degree of use from their machines. There is realization that truck owners need their equipment every working hour of the day and that when repair or adjustment is necessary the work should be done in the shortest time consistent with good workmanship.

This is not with a view of keeping expense to the lowest point, although economy is a potent factor, but to restore the machine with the least loss of time, for this means much to the owner. Waiting for repair parts, inefficient workers, lack of facilities to undertake any work, shop congestion, inadequate shop equipment and incompetent administration are all factors that might contribute to retardation of work, and when a service station is operated by a successful concern there is reason to believe that it has met business requirements and is satisfying its customers.

Atterbury Owners' Service.

The Atterbury Motor Car Co. is represented in Boston by Connell & McKone, 199 Brookline avenue, which is also distributor for Overland and Willys-Knight passenger cars and Bethlehem trucks. This concern is the Atterbury agent for eastern Massachusetts and parts of New Hampshire and Vermont. It is represented at Providence by Pugh Bros., distributor for several makes of cars and trucks in Rhode Island, southern Massachusetts and eastern Connecticut. These are representative of the Atterbury sales and service organization.

Connell & McKone has a very large service station in Brookline avenue and Overland street. It consists of two connected buildings, the one of three and the other of four stories, the latter being used at present by the government for war work. It is shortly to be turned over to the company and its use will be resumed. The three-story building has storage space for 200 vehicles on each floor. The first floor includes the sales room, which has display space for a dozen or more machines, the parts stock room, shipping room, service office, general garage and quick repair department. The second floor is given over to storage of vehicles to be delivered, and the third floor to repair departments, including body finishing. The paint shop, for instance, is equipped with two large ovens.

The company carries in stock upwards of $100,000 value of repair parts, so that any order can be filled immediately upon receipt. Any work that is offered can be done quickly by efficient workmen who have the machine and hand tool equipfent to do any restoration that may be required.

The statement made with reference to Connell & McKone can be applied equally well to Pugh Bros., which has a very large and completely equipped service station and carries a sufficient stock of parts to fill all orders. The same statement can be made with reference to

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©THE FISK RUBBER CO. 1919

THE UNINTERRUPTED DISTRIBUTION of perishable goods is vitally important to all classes. The motor truck is the dependable link in the transportation chain

MOTOR TRUCKS must operate continuously in all weathers.

FISK PNEUMATIC CORD TIRES grip the road and do their share in holding the truck to its schedule in snow or rain.

THEY PERMIT speed, absorb road shocks, reduce fuel and repair bills.

THE TOUGH Fisk non-skid tread insures traction, will not skid and wears long.

BUY FISK Pneumatic Cord Truck Tires for efficiency and economy.



FISK TRUCK TIRES

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other concerns in different parts of New England and the Atlantic coast states.

These large distributors have their own agents in the territories they control, who are required to afford the standard service, depending, of course, upon the distributing concerns for repair parts and, whenever necessary, for expert workers. The Atterbury warranty is high and the company undertakes to satisfy buyers by service that will meet every demand of practical business men.

UNITED BRASS AND ALUMINUM HAS REORGANIZATION.

The plant of the United Brass and Aluminum Manufacturing Co., Port Huron, Mich., has been extended and is now making brass bushings for the Packard, Northway Motors Co. and other concerns. There has been a reorganization, with these officers: President, Jacob Goldman; vice president, H. S. Grant; secretary and treasurer, Shirley Stewart, and Albert Ryan general manager. This concern was formerly the William O. Lee Co.

NELSON MOTOR TRUCK CO. IS NOW INCORPORATED.

The Nelson Motor Truck Co., Saginaw, Mich., manufacturer of Jumbo truck, has changed from a copartnership to an incorporation, with $500,000 capitalization. The officers are: President and general manager, H. B. Nelson; vice president, J. J. Nelson; secretary and treasurer, C. J. Nelson. Twelve hundred trucks are to be made this year.

WILCOX RETURNS TO COMMERCE COMPANY.

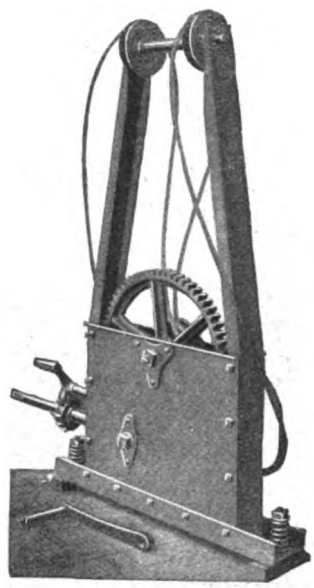
Maj. George D. Wilcox has returned as director to the Commerce Motor Car Co., Detroit, in charge of sales and advertising, following his discharge from the Quartermaster Corps, where he commanded the Detroit District of the Motors Division.



Maj. George D. Wilcox, Director of Sales and Advertising, Commerce Motor Car Co.

COLUMBIAN LIGHTNING HOIST FOR DUMP TRUCKS.

In the Columbian "Lightning Hoist" the main objection to manual equipment —the uncertainty of practical operation by one man—has been overcome. The Columbian hoist has been perfected after years of labor and experience, and with it a man can discharge a load from a gravity discharge body as rapidly as with a power driven hoist.



The Columbian "Lightning Hoist," Manually Operated, for Gravity Discharge Dump Trucks.

The Columbian hoist is composed of less parts than the ordinary apparatus, and is foolproof. The frame is made of rolled steel. The large gear and the drum are cast in one piece. The pinion is made of bronze. The hoist has a test capacity of 30,000 pounds. It will handle with ease a five-ton load and elevate the load to maximum height.

The hoist is so constructed that it will fit any chassis or frame. It is designed on the principle of geared wheels. The appearance is attractive. It is especially valuable for such firms as coal companies, contractors, sand, crushed rock companies, etc., as it facilitates unloading and getting away, saving time and labor.

The hoist is manufactured by the Columbian Steel Tank Co., 1601-21 West 12th street, Kansas City, Mo.

BIG CAPITAL FOR MUSKEGON TRUCK COMPANY.

A charter has been filed in Delaware for the Muskegon Truck Co. by C. E. Johnson, Muskegon, Mich.; Joseph Tozelaar, Grand Rapids, Mich., and H. L. Schuh, Lowell, Mich., with capital of $4,325,000.

CASS GOES TO GARFORD TRUCK.

J. M. Cass is now advertising manager of the Garford Motor Truck Co., Lima, O. He was formerly sales and advertising manager of the United Motors Co.

WOULD HAVE TRUCKS AND TRAILERS SHOW TONNAGE.

A bill pending in the New York Legislature would require automobile trucks and trailers to show the tonnage of such vehicles in numerals, such numerals to be of the same size and to immediately precede the registration number and to be separated therefrom by a hyphen.

GRANT MOTOR EARNINGS FOR YEAR.

The Grant Motor Corporation, after paying the preferred dividends, which left a balance of more than 20 per cent. on common stock, had earnings of more than $450,000 for the year ended Dec. 31.

FRUEHAUF SAYS SEMI-TRAILERS CONSERVE MAN POWER.

"Every owner of a semi-trailer is firmly convinced that the semi-trailer conserves man power," says H. C. Fruehauf, sales manager of the Fruehauf Trailer Co., Detroit, Mich. "In the first place a two-ton truck and a six-ton semi-trailer will haul as large loads as three two-ton trucks. And but one driver is required, thus saving the wages of two drivers.

"Because modern trucks are limited in their carrying capacity is no reason to believe that larger loads cannot be hauled. We have demonstrated time and again that a semi-trailer will treble the carrying capacity of a motor truck.

"With economy the watchword, many manufacturers, contractors, lumber dealers and other business men are adopting semi-trailers not only because of the saving in wages that follows, but because of decreased operating expenses. We have fully substantiated our claims that a semi-trailer will reduce haulage costs from one-half to two-thirds.



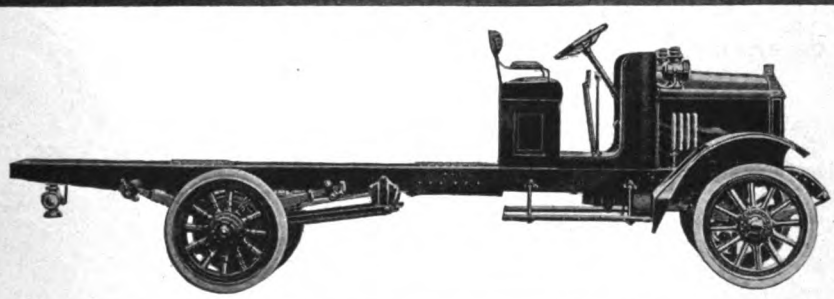
H. C. Fruehauf, General Manager Fruehauf Trailer Co., Detroit.

"This is an important matter at the present time when a shortage of motor trucks is predicted and a high labor cost confronts the employer."

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TOWER
MOTOR TRUCKS

Tower Dealers
have the confidence and
Tower owners. It could hardly
be otherwise for Tower construction
represents the very best in Motor
Truck values. Our catalogue is of special interest
to the Lighter Type Motor Truck Dealer
for it explains why it should be
represented by leading Dealers
We will be pleased to send a copy
J. E. Davis
General Mgr.



TOWER 2-TON TRUCK.

Both the 2-Ton and 3½-Ton TOWER Trucks are built to give uninterrupted performance and service at an uncommonly low ton-mile cost.

"The Freight Car of the Highways"

Tower Motor Truck Company
TOWER AVE., GREENVILLE, MICHIGAN.

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WEDDELL BECOMES ADVERTISING MANAGER OF FIRESTONE TIRE.

Justin R. Weddell, formerly sales manager of the Corday & Gross Co., Cleveland, has become advertising manager of the Firestone Tire and Lumber Co., Akron, O. More than 10 years ago he became connected with a large Chicago advertising agency and later went to the Barnes-Crosby Engraving Co., Chicago, and became manager of the Cleveland office of the company.



Justin R. Weddell, Advertising Manager, Firestone Tire and Rubber Co., Akron, O.

He developed the service of the company and established a reputation for unusually complete advertising and selling counsel. He then organized the Weddell-Schmidt Co., Cleveland, and this concern was merged with the Corday & Gross Co., and he became sales manager, which post he held for three years. He is a graduate of the New Mexico State College and Denison University.

WHITE IS PRESIDENT OF BAKER-R. & L. CO.

C. L. F. Wieber has resigned as president of the Baker-R. & L. Co., Cleveland, maker of Rauch & Lang electrics, Owen Magnetic gasoline cars and B-R. & L. electric industrial trucks and tractors. Mr. Wieber is now acting as chairman of the board. Fred R. White is now president. Manufacture of 4000 cars is planned for this year, but the largest increases will be in the body department and in industrial trucks.

BUYS CANADA SITE FOR FRAME PLANT.

The General Motors Corporation has bought a factory site of 37 acres in Windsor, Ont. The company is also to establish a new frame plant in Flint, Mich.

M. Ray Stehley has become branch manager in Brooklyn, N. Y., for the Reo Motor Car Co. He was formerly in charge of the Reo branch in New Rochelle, N. Y.

HAYSSEN HEADS STERLING MOTOR TRUCK CO.

R. G. Hayssen has been elected president of the Sterling Motor Truck Co., Milwaukee, of which concern he has been secretary and treasurer. He succeeds Victor L. Brown, who retires from active business. E. M. Sternberg is vice president and Frank Luick is secretary and treasurer.

KELLEHER ELECTED VICE PRESIDENT OF STENMAN CO.

Stockholders of the Stenman Electric Valve Grinder Co. at their annual meeting at the offices of the company in Worcester, Mass., elected J. J. Kelleher vice president and general manager. During the past year he has been sales manager. He will continue to direct the sales of the business and in addition will have entire charge of the factory.



J. J. Kelleher, Vice President Stenman Electric Valve Grinder Co.

The company reports that sales of its electric valve grinder have increased more than 100 per cent. since the armistice was signed.

At the New York show, in the Armory, a Stenman grinder was shown in operation, grinding the valves of a Ford motor.

ONEIDA SERVICE STATION IN NEW YORK COMPLETED.

The West Motor Co., Inc., eastern and export distributor for Oneida trucks, announces the completion of its service station, running from 19th to 20th street on Avenue B, New York City. The combined sales room, chassis storage and service department cover more than 40,000 square feet. The company was organized by Sidney J. West and others in 1913. It now wholesales Oneida trucks in 19 states and abroad.

The Atterbury Motor Car Co., Buffalo, N. Y., has increased its capital from $250,000 to $500,000.

STANDARDIZATION OF GEAR MAKING MAKES PROGRESS.

The Standardization Committee of the American Gear Manufacturers Association recently met at the Hotel Statler, Buffalo, N. Y., and a well defined program was laid out for future activities. Every committee had representatives present, and all phases of the subject were discussed. It is expected that quite an advance toward the standardization of some of the phases will be made by the time of the annual meeting in April.

The standardization of gear making is one of the most important programs that the automotive industries have outlined for the reconstruction period. The cooperation of every gear manufacturer in the country is sought. President F. W. Sinram of the American association, in urging to action the standardization committee, which represents gear manufacturers, has begun a definite reconstruction movement.

COMMERCE MOTOR CAR MEN IN CONFERENCE.

A conference of the district sales managers of the Commerce Motor Car Co., Detroit, at the factory, has been completed, and managers have returned to their respective territories. George D. Wilcox, director of sales and advertising, announces these men as follows: W. H. Brinkerhoff, W. B. Wood, William J. Ward, N. R. Horner, S. Wier and L. J. Stevenson.

LYONS NOW ASSOCIATED WITH B. F. EVERITT CO.

L. E. Lyons, who for six years has been sales engineer of the axle division of the Sheldon Axle and Spring Co., with offices in Detroit, is now associated with the B. F. Everitt Co., Detroit, manufacturer and distributor of the Elbertz positive drive differential.



L. E. Lyons, Sales Engineer, Now with B. F. Everitt Co., Detroit, Mich.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 3. PAWTUCKET, R. I. MARCH, 1919.

BOSTON TRUCK DEALERS' SHOWS

Fifty-Six Concerns, Will Exhibit 70 Different Makes in Salesrooms During Auto Exhibition—Displays Will Be the Best Products of Industry and Specialists.

WITHOUT a truck exhibit, a condition that has not obtained since 1913, the Boston automobile show, which will be inaugurated in Mechanics' building, Huntington avenue, the evening of March 15, will be given over entirely to the display of passenger cars. In 1911, 1912 and 1913 separate exhibitions followed the car shows because of the special promotion that was believed by the dealers to be desirable.

Previous to those years, and from 1914 to 1918 inclusive, a department of the big building was set apart for the display of trucks. This year, because only a part of the structure was available, the management, after conference with the dealers, decided to abandon the truck department and to have an exhibition exclusively of passenger cars.

There was no reason why the truck dealers could not have held an exclusive truck show, following the example of the trade in New York and Chicago, but the conditions differ greatly in New England as compared with those cities and the dealers, with ample business experience upon which to base judgment, decided it best to give over a separate exhibition, although there is reason to believe that the result would have been extremely profitable.



Chester I. Campbell, General Manager Boston Automobile Show.

Mechanics' Hall, Huntington Avenue, Boston, Where the 17th Annual Automobile Show Will Take Place March 15-22.

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Boston will not have a truck show in the sense that there will be a collective exhibition of machines, but it will have what will be the best show of trucks ever seen in America, for every dealer in the city and suburbs will make a special sales room display, and means will be provided by most of them for taking visitors from Mechanics' building to the sales rooms.

Truck Departments Are Limited.

In the years when the passenger car and truck shows were combined the basement of the building was devoted to the latter exhibits and the remainder of the structure to the former class. The truck department for several years had been very much congested and the number of applicants so numerous that the exhibition areas were greatly restricted. This necessitated a reduction of the exhibits to such an extent that in many instances but one or two machines could be shown.

Each year the truck department of the Boston automobile shows has grown in the number of exhibitors, the number of makes shown and the attendance, but the exhibition area could not be added to without reducing the space required by the passenger car dealers, save by having a section in another building, and no structure was available within a distance that the visitors could reach conveniently.

The diminution of the number of trucks that could be displayed in the limited areas was found by exhibitors to be a condition that handicapped the sales forces materially, for but one or two chassis or complete machines could be shown, and there was no space for the exhibition of special bodies, in which there was decided interest.

Various expedients were resorted to by the dealers, such as placing small trucks on larger machines, elevating chassis, nesting bodies and in other ways displaying certain qualities of design and construction, with a view of affording all the space that was possible for the sales forces and visitors, but the congestion increased. Very frequently exhibitors had supplementary displays in their sales rooms and cars were provided to convey interested inquirers to these in the event



J. W. Maguire, Vice President, Boston Commercial Motor Vehicle Association.



J. S. Hathaway, President, Boston Commercial Motor Vehicle Association.

they wanted to examine chassis and bodies that were not shown.

Government Still Using Building.

After the automobile show of 1918 Mechanics' building was taken by the United States War Department for storage and the greater part of the building was utilized for this purpose until after the first of the present year. The Boston Automobile Dealers' Association and the Boston Commercial Motor Vehicle Association, which for years have jointly organized the shows, decided to abandon the exhibition, because there was no reason to believe the building would be released during the period of the war.

This was the condition when the Allied nations entered into an armistice with Germany. Immediately the automobile dealers' association of the country agitated the continuance of the exhibitions, and the Boston association made application to the War Department and eventually was assured that the main floor and the upper stories would be vacated by the government in season for the show, provided the date was made as late as possible. There was hope that the basement would be available as well, and plans were made for a truck department as in previous years, but finally information was received that the government could not release this part, and there was no alternative than to give over the display of trucks.

Special Sales Room Exhibitions.

The members of the Boston Commercial Motor Vehicle Association then decided that they would all have sales room exhibitions during the automobile show and would display complete series of chassis, construction units and parts, and as many special bodies as were obtainable. The preparations were made systematically so far as each dealer was concerned. There was no understanding as to show room decorations, each truck branch or agency being free to enter into whatever engagement might be desirable, but there was agreement that each would undertake to show every type chassis and body that was essential to complete display.

A headquarters at the automobile show was provided for, at which inquirers may obtain information relative to any one or number of sales room exhibitions, this including the name of the branch or agency, the street location, the direct routes, from the show to any one or a series, the available means of transportation and the private means of conveyance and the scheduled times for departure from the building. In addition, literature of the different manufacturers will be kept for distribution.

The dealers plan to have representatives at the show who will be able to give to inquirers every desirable fact, and facilitate their visits to the sales rooms. In this there has been a fine spirit of cooperation manifested and nothing has been neglected that will in any way convenience prospective buyers. The sales room will be open each day and evening until the close of the show.

Special Attractions for Visitors.

Some of the dealers have made special preparation to attract visitors. They will have representatives from other cities and towns in attendance, in some instances from most of the principal commercial centers the greater part of the week, and these men will afford to visitors a personal attention such as might be given in the sales rooms of their home towns, with the additional advantage of learning from personal investigation the character and quality of the service that can be consistently expected and relied upon.

Some of the Boston branches and agencies operate very large plants and have numerous representatives. Those that have agency territory of considerable area must have service stations adequate to the requirements of the business done and have service organizations and stocks of units and parts sufficient to meet any demand made upon them.

Value of Service to the Owner.

Service is a very large factor in the sale of trucks and much depends in the minds of the probable buyers on whether or not they can rely upon the Boston or



Day Baker, Treasurer, Boston Commercial Motor Vehicle Association.

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H. H. Halliday, Director, Boston Commercial Motor Vehicle Association.

principal New England distributor for delivery of parts and, in the event of need, expert attention that may be necessary under some circumstances. The territory of the Boston branches, dealers and distributors ranges very broadly, in some instances including only the city and the suburbs, and in others all of the New England states and some of the Canadian provinces. The service stations and the service afforded is correspondingly varied. In some instances the stations are big plants, because they serve large areas, some concerns having a number of stations in different sections which are operated practically as are the main New England plant. To illustrate, one concern has what is agreed to be the largest station in New England, yet the demand upon it necessitates the operation of others in Providence, Worcester, Portland and Manchester, and in addition similar plants are operated by agents in other cities.

A Potent Factor with Buyers.

The service plan of any truck manufacturer has a very potent influence with buyers from the fact that truck owners today realize that when repairs are necessary they must be made in the shortest time that is practically possible, because delay means loss of service and this cannot be made up. Not only this, the use of trucks to do the work is costly, and, perhaps more important than all else, is the insurance of the work being done well. There are many truck owners who rely very largely upon the service stations for overhaul work, but expect their own mechanics to make all minor repairs and adjustment.

There are those who believe there is greater economy in doing all their own work, equipping shops and having experienced mechanics in their service. They feel that with their own equipment they can obtain greater economies than by having the work done at the service stations. But they want delivery of parts made in the shortest possible time. No matter what his policy may be, the truck owner wants to know exactly what he can depend upon, and for this reason the visits of inquirers to the sales rooms of the agents ought to be productive of good results and establish confidence that might not otherwise obtain.

Boston Dealers Sell 70 Makes of Trucks.

The Boston Commercial Motor Vehicle Association is a well established and responsible body. It has today no less than 54 different concerns as members, and these represent 70 different makes of trucks and conversion units for passenger car chassis. Of these 44 sell one make of machine, six sell two makes, two sell three makes and two sell four makes.

There is no question that a very large number who will visit the Boston show are business men who are directly concerned in the use of trucks, and because they will be quite as desirous of seeing the trucks as the cars, and time may be limited, MOTOR TRUCK has prepared a directory that will be found a decided convenience. This will be found on another page. In this the trade name of every truck and chassis is placed in one column, and in parallel columns are placed the names of the branches or agents, and the street addresses. Whenever the location is outside of Boston this fact is also specified.

By reference to this one can ascertain practically at a glance the trade name of a truck, and with the other information one may communicate by telephone direct and obtain first hand replies to quiries, or inquiry may be made at the information bureau at the automobile show.

Some of the sales room exhibits will be especially interesting, for they will include specially designed and constructed bodies, and statement is made by engineers that the economy and efficiency of power trucks depends upon the bodies quite as much as to any other detail.

Value of Special Bodies.

Remarkable progress has been made in body design and construction.

The statement that here is quite as much necessity of careful determination of the body equipment of a truck as there is in choice of a chassis is well founded, and for this reason much attention has been given by experienced transportation men to bodies. Truck manufacturers are first of all chassis builders, and standard type bodies, such as express, platform, stake platform, rack side platform, dump bodies and some types of covered or van bodies may be supplied by them as stock equipment. Viewed from one aspect the buyer may assume that the truck builder, because he can standardize types and produce them in quantity, can build and will sell cheaper than will a local body specialist who must produce to specification and for that reason must obtain larger prices for single orders.



P. S. Aultman, Director, Boston Commercial Motor Vehicle Association.



C. P. Rockwell, Director, Boston Commercial Motor Vehicle Association.

But at the other hand, no truck manufacturer can produce special bodies at lower cost because these must be constructed to order, and material, labor and fittings must be charged for on exactly the same basis as the specialist charges. And beyond all this is the additional freight charged for shipping, which in some instances will reach a considerable sum. While stock bodies may meet some requirements satisfactorily, in many others far greater economy could be obtained with equipment designed by the custom builder, who will study conditions for use, the highways on which the work must be done, the blue prints of the chassis, and from all of these create what will afford the largest measure of practical utility.

Body Specialists Study Conditions.

Body specialists are men of experience, who have had to deal with designs for greatly diversified work, and who have necessarily studied requirements that are seldom if ever considered in the production of stock bodies. Truck dealers who sell transportation with the object of developing future business understand that the business man is buying trucks just as he would any other commercial or trade essential, and they realize that they must advise him wisely or refer him to those who can inform him. Of course there is nothing as convincing as an object lesson, and for that reason displays of bodies are regarded as necessary in truck exhibition as the

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chassis.

What has been stated has been to emphasize why the show room displays of the Boston dealers will be especially interesting. The dealers have realized that they are handicapped as compared with an exhibition where many machines can be shown, but they can through the exhibit of various special bodies afford a character of information that could not be otherwise obtained, and which will be of decided benefit to inquirers. Those who are buying trucks should bear in mind what is learned in a tour of the show rooms of the truck dealers will be extremely useful to them for all time, and that the time they devote to gathering of such data will be wisely applied.

Loading and Unloading Equipment.

There is one source of information that ought to be given thoughtful attention, and that is the provisions made by users of trucks to insure rapid loading and unloading of trucks. These cannot be found in show rooms nor in exhibition halls, and can only be seen by making visits to the terminals where these facilities have been provided. There is no question that all of the Boston dealers have more or less intimate knowledge of economies that have been obtained, and if they are consulted with reference to precise needs they will in many instances be able to advise truck users of them. They may be able to place inquirers in contact with those who have first hand knowledge.



Charles E. Fay, Member, Boston Commercial Motor Vehicle Association.

Of course this information does not in a sense enter into truck selling, but there is no question that such advice as has been suggested will have special value, and there is no reason why it cannot be obtained, at least sufficiently for those interested to determine whether or not any particular facility can be used practically by them.

The show room exhibitions leaves the exhibitors free to devote themselves to interested inquirers, and every Boston dealer can undoubtedly arrange for visitors observing actual service of trucks. Such demonstrations are valuable from the fact that the work is done by drivers who are responsible to their owners and have regular work.



J. H. MacAlman, President, Boston Automobile Dealers' Association.

Some of the Show Room Exhibitions.

The following are typical of the arrangements made by the different dealers for the sales room displays:

Autocar Sales and Service Co., 642 Beacon street, Boston; telephones Back Bay 4880-4881-4882-4883-4884 will reach both sales rooms and service station. This exhibit will consist of standard chassis and a number of bodies of all types.

Day Baker Motor Truck Co., 39-41 Ferdinand street; telephone Beach 191 will reach office, ware room and service station. This exhibit will consist of one two-ton Atlantic electric truck, and a series of Hunt industrial electric trucks designed for mill, factory and pier service.

J. W. Emery Co., 72 Brookline avenue; telephone Back Bay 287 will reach sales room and service station. This display will consist of Winther trucks, Perker-Elwell electric industrial trucks and other industrial transport units.

Connell & McKone Co., 109 Brookline avenue; telephone Back Bay 8730 will reach sales room and service station. This display will consist of a full series of Atterbury and Bethlehem trucks, both the chassis and equipped with various types of bodies built by this concern, and a series of Overland delivery wagons, both the chassis and standard and special bodies.



F. C. Henderson, Member, Boston Commercial Motor Vehicle Association.

C. E. Fay-Allen Co., 620 Commonwealth avenue; telephone Back Bay 4003 will reach both sales rooms and service station. This display will include a Maxwell one-ton chassis, Maxwell one-ton chassis with cab and windshield, Maxwell one-ton chassis with stage gate body and cab and windshield, Maxwell one-ton chassis with box body, Maxwell one-ton chassis with box body and cab and windshield, and a Maxwell one-ton chassis with express canopy body with integral cab and side curtains and windshield.

Proctor Fisher, Inc., 595-603 Newbury street; telephone Back Bay 7640 will reach office, sales rooms and service station. This display will include a complete series of Stewart trucks, and the entire building, including stock room and service station, will be open for public inspection.



George W. McBride, Member, Boston Commercial Motor Vehicle Association.

Hudford Truck Co., 148 Berkeley street—special show room at 21 Huntington avenue, between Mechanics' building and Copley square; telephone Back Bay 5184 will reach the special sales room. This display will include Lauton conversion units of one and two-ton capacity, Marvel Extensions for Ford ton trucks, Float-a-Ford shock absorbers and a complete series of Parry commercial bodies.

Kelly-Springfield Motor Truck Co., 596 Commonwealth avenue; telephone connection with sales rooms and service station. This display will consist of a full series of Kelly-Springfield trucks. This company will have one or more representatives at the automobile show and will have touring cars making regular trips between Mechanics' building and its office.

Triangle Motor Truck Sales Co., 94 Massachusetts avenue, Cambridge; telephone Cambridge 2595 will reach sales rooms and service station. This display

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will include a complete series of Triangle chassis and chassis equipped with bodies.

Locomobile Co. of America, 700 Commonwealth avenue; telephone Back Bay 5380 will reach sales rooms and service station. This display will include a full series of Riker trucks.

Merchants Motors, Inc., 584 Commonwealth avenue; telephone Back Bay 8947-8948 will reach sales rooms and service station. This display will include a full series of Acason trucks from one to five ton capacities.

W. L. Russell Co., 218 Elliott street; telephone Beach 7380 will reach sales rooms and service station. This display will include one-ton, two-ton and three-ton Service chassis and complete trucks with varying types of bodies.

Republic Truck Co. of Boston, 33 Brookline avenue; telephone Back Bay 8420 will reach sales rooms and service station. This display will include all models of the Republic series from ¾ to 3½ tons and a series of standard and special bodies. District Manager Mulholland of the Republic Motor Truck Co. and Manager D. Earle Brackett of the company's wholesale deparment will be present during the week. The company will have sales representatives at the automobile show and will have two touring cars operating between the Mechanics' building and the sales rooms.

E. Y. Stimpson, 530 Commonwealth avenue; telephone Back Bay 8823-8824 will reach both sales rooms and service station. This display will include a Ward special electric truck with delivery box and a Ward two-ton electric chassis.

White Co., 930 Commonwealth avenue; telephone Brookline 5200 will reach sales rooms and service station. This display will consist of a White Good Roads truck, a 23-passenger 'bus, a combination fire pump with capacity of 600 gallons a minute, a tank truck built for the Standard Oil Co. and a five-ton chassis driven by the double reduction gear drive recently announced by this company. This will be the first time this drive will be shown in Boston. These will be special exhibits. In addition there will be exhibition of all of the White truck series with standard and special type bodies.

MAJOR HILL BACK AT DETROIT.

Maj. Reuben Hill has returned to Detroit from France, where he was on the staff of technical experts in the engineering division of the artillery ammunition. He was formerly works manager of the Detroit Lubricator Co., and he organized that company's plant in Walkerville, Mich., for the manufacture of 18-pounder British ammunition.

BATTLE CREEK CASTING CO.

The former Galesburg Casting Co. has located in Battle Creek, Mich., and is now known as the Battle Creek Casting Co. The units of the plant include a gray iron foundry, a smelting room and a fireproof pattern room. A brass foundry will be erected later. Frank Scott and E. W. Cole of Battle Creek are principally interested.

ROAD BUILDERS RECOMMEND LAWS FOR TRUCKS.

The following regulations for motor trucks on the highways were favored in a resolution adopted at a conference of the American Road Builders' Association in New York City:

The gross weight of vehicles and load shall not exceed 28,000 pounds on four wheels.

The total height shall not exceed 12 feet two inches.

The total width shall not exceed eight feet.

The total length shall not exceed 28 feet.

The total weight per inch width of tire (measured at the base of rubber) shall not exceed 800 pounds.

The speed of motor trucks and trailers entirely equipped with solid rubber tires shall not exceed 15 miles per hour.

The secretary was directed to forward copies of the resolution to the governors, state legislatures and state highway commissioners.

The resolution is in line with the action recently taken by the National Automobile Chamber of Commerce favoring a uniform state law for motor truck speeds and weights. For the benefit of highway transportation, something akin to state uniformity is urgently needed. The New York law makes 25,000 pounds the maximum, New Jersey allows 30,000 and Massachusetts permits 28,000.

SUBSIDIES FOR MOTOR TRUCKS IN JAPAN.

The Japanese diet has passed an act, known as the Military Motor Vehicle Subsidy Law, which provides subsidies for manufacturers and owners of motor vehicles suitable for military use. capable of carrying one ton. The vehicles may be requisitioned at any time for reasonable compensation. Beneficiaries must eventually be Japanese subjects, and the vehicles must be of Japanese manufacture. Pending greater production of Japanese vehicles, however, owners of foreign manufacture are allowed within the subsidy scheme.

The introduction of American motor vehicles, particularly motor trucks, into Japan, has not progressed as rapidly as in some other countries, owing to poor road conditions and cheap coolie labor. A few American automobile and tire concerns have become well established there. The Goodyear Tire and Rubber Co. has for several years done a good business there in tires, tubes and accessories.

WRIGHT WITH BERRY'S SALES CO.

F. S. Wright has become sales manager of the James B. Berry's Sons Co., Inc., Oil City, Pa., having resigned as sales manager of the New York branch of the Valvoline Oil Co.

The Comet Automobile Co., Decatur, Ill., is making a 1½-ton truck to sell for $1750, instead of the 1¼-ton model, which sold for $1575.

CITIES AND TOWNS DEFEND JITNEY LINES.

Jitneys had vigorous defenders at a legislative hearing held in Massachusetts on nine separate petitions, seven of which were filed by the Bay State Co., complaining of the regulations for jitneys in Lawrence, Haverhill, Malden, Lynn, Salem, Brockton and Swampscott. The Union Street Railway complained of the jitney regulations in New Bedford and the Massachusets Northeastern Street Railway complained of the regulations in Newburyport.

The companies urge that the jitney regulations do not provide for a regular service and that the size of bond required is not large enough. They say that jitneys should be compelled to operate over designated routes for 16 hours each day.

The cities and towns, represented by city solicitors, objected to the more stringent regulations asked, and City Solicitor Frederick H. Magison of Haverhill, in speaking of the bond required, declared that "the Bay State company is more irresponsible than any jitney driver in the commonwealth."

City Solicitor Daniel J. Murphy and John C. Twomey of Lawrence defended the regulations of that city, declaring that the jitneys are not taking patrons away from the Bay State, but are developing new business. The mills of Lawrence release 40,000 operatives simultaneously, and it is impossible for the street railway to handle this number of people, they said. The jitneys, therefore, they argued, are doing business with people who formerly walked.

The city of Lowell compels jitney operators to file a bond of $5000, which has had the result of reducing the number of licensed jitneys from about 200 to approximately eight, Mr. Twomey said. He characterized the action of the street railway companies as a "plot" to put the jitneys out of business.

MANY TRUCKS AT BUFFALO SHOW.

Buffalo's automobile show proved a big success. There were 250 automobiles and trucks exhibited. The show was held under the direction of the Buffalo Automobile Dealers' Association, and was the 17th annual. The results, both in attendance and sales, were splendid. Many farmers attended. The accessory exhibit was unusually good.

MICHIGAN ROAD IMPROVEMENTS.

The board of supervisors in Charlevoix county, Mich., will offer for sale $150,000 more of the county's road improvement bonds the coming spring, and will use the funds for the construction of concrete highways adjacent to Boyne City, Boyne Falls, Walloon Lake, East Jordan and Charlevoix.

There were 515 trucks exported from the port of New York in January, as compared with 430 the previous month. Japan's purchase of trucks is surprisingly large.

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WHAT WAR SERVICE DID FOR THE MOTOR TRUCK INDUSTRY

By Chester I. Campbell, Manager Boston Automobile Show.

THE war has taught America a new reliance in motor trucks. United States' effort in the war depended largely on a great concentration to speed up. This has had the effect of stimulating confidence in truck service and utility and in the future there are wonderful things in store for the motor truck industry.

Although we are not going to stage a truck show in Boston this season, it is not because there is no demand for it. The truck dealer was enthusiastic over the proposition, but the great building was not available for a show at the dates required. On all sides, however, I hear of big business among the truck men and during the week of the Boston show every agent and truck dealer in Greater Boston will have a truck show of his own in his sales rooms. There will be thousands of men in Boston during the automobile show who are vitally interested in trucks and I am confident that the agents and dealers of commercial vehicles will do a tremendous business.

The development in trucks has been astonishing. I do not think that it is an exaggeration to say that the motor truck made greater advance in the two years of warfare than would be possible in 10 years of normal activity. What the truck did to help the cause of freedom has too often been recited to need repetition here. At home the truck was a transportation factor in almost every war contract.



Chester I. Campbell, Secretary, Boston Commercial Motor Vehicle Association.

Trucks dragged away the dirt from excavations. They brought in material to build the new factory. They brought raw material to the factories and then delivered its finished products.

The motor truck brought the manufacturer near his market, facilitated the movement of foods, gave the farmer help at a time when labor was scarce, took the place of the railroad in short hauls, proved invaluable to the country and in a thousand different ways taught the country that a new form of transportation has finally come to its mature development.

A foremost contractor in hauling has recently said that one of the lessons of the war is that no construction on an extended scale will ever be attempted without the truck being considered in connection with its transportation problems.

The war gave manufacturers a new skill in quantity production. It increased facilities and improved methods.

Even though temporarily during the period of reconstruction there may be a lull in the volume of business, there can be no question that the industry is just entering into a new and greater period.

MAY AMEND RHODE ISLAND TRAFFIC LAWS.

A law that would compel the drivers of vehicles to protect and grant the right of way to all other vehicles approaching on their right at the intersection of any street or public highway is proposed in an act introduced in the House of Representatives in Rhode Island. The present law has a similar provision, but the proposed act defines more clearly its intent.

Provision is made that traffic officers when on duty at such intersections may direct traffic so that there will be no interference with city or town ordinances. Every vehicle would have to keep to the right of the intersection of the center of all public highways. It would be necessary for the driver to keep to his right and watch the travel on his right, as he would be protected under the law from vehicles approaching him on the left.

WESTLAKE JOINS MCGRAW TIRE SERVICE.

W. A. Westlake has become eastern sales manager of the motor truck tire department of the McGraw Tire and Rubber Co., 1891 Broadway and 515 West 56th street, New York City. Mr. Westlake was one of the first tire men to talk service in connection with motor trucks and motor truck tires, and was one of the "Original Thirteen" organizers of the Motor Truck Club.

PROPOSED AUTO LEGISLATION IN MASSACHUSETTS.

Autoists will have to be mighty careful when driving along wet or slushy streets, if a bill introduced in the Massachusetts Legislature becomes a law. Senator Beck of Suffolk urged the Committee on Judiciary to report his bill providing that a person who operates a motor vehicle so willfully, carelessly or negligently as to bespatter the person or property of another with water, mud or slush shall be punished accordingly.

No one appeared for the bill assigned for hearing on petition of the Garage Association of Metropolitan Boston that persons maintaining public garages may have a lien on motor vehicles stored with them for labor performed and materials and supplies furnished.

No one appeared for a petition that a registered owner of a motor vehicle shall be held responsible whether operated by the owner in person or not, but it was opposed by a representative of automobile owners.

HAYES WHEEL CO. REPRESENTATIVES CONFER.

Post-war plans were discussed when the Hayes Wheel Co., Jackson, Mich., entertained 100 of its officials and branch representatives from Albion, St. Johns, Anderson, Ind., and Chatham, Ont., at the City Club, Jackson. It was the consensus of opinion that the business outlook for the company was splendid.

BELGIAN ALDERMAN WANTS GARFORD TRUCK.

The Garford Motor Truck Co., Lima, O., has received this letter from Oscar Thomas, alderman of public works at Ronse, Belgium:

"When the armies which came to the rescue of our country passed I noticed some automobile trucks built by your factory. As I am interested in the purchase of such a truck, kindly send me your catalogue and terms."

"You know there may be a very interesting story behind that letter," said E. A. Williams, Jr., president of the Garford Motor Truck Co., in commenting upon it. "One can picture the devastated town, the retreat of the Germans before the advancing Allied armies and the return of the inhabitants to what might be left of their homes.

"With the American forces came the Garford trucks carrying relief perhaps to the residents. Our friend, the alderman, observed these as they passed through his city. No doubt he made inquiries of one or two of the drivers relative to the performances of the Garfords. The letter was the result."

WILL SELL STEWART TRUCKS.

Frank T. Gray, for several years a traveling salesman for the Haven & Geddes Co., has joined the sales force of the Martin Truck Co., Indianapolis, Ind., distributor of Stewart trucks.

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HOW TRUCK MANUFACTURER REGARDS OPERATING COST ACCOUNTING

By W. K. Ackerman.

THE matter of keeping an accurate record of motor truck operating costs is at the present time claiming much attention from users and manufacturers alike.

Certainly the keeping of such records will not only result in saving thousands of dollars to users, but prove a great boon to manufacturers. The tabulation of costs, however, if not properly based, will result in figures unfair to the truck on which the data is gathered.

A multiplicity of phases enter into this accounting, but it is not the writer's intention to go into the methods to be employed—rather to confine this brief discussion to the effect of such accounting on the motor truck industry.

The basic principle is the selection of the proper type of truck for the user's needs. Each individual should carefully study his hauling problem, or especially any peculiar or extraordinary conditions existing in the locality in which he operates.

If a two-ton job will do the work without resorting to the common practise of overloading, and without undue stress or strain, that is the type to buy. If, however, the particular hauling to be done requires a heavier model it is, of course, at once apparent that this is the better buy in the long run and the resultant saving in cost of maintenance will prove a big return on the additional amount invested.

Next in importance is proper body equipment. Here again the user is confronted with a big problem, and a proper choice means a maximum of truck efficiency. It has been repeatedly demonstrated that special bodies correctly designed will double, and sometime triple, the capacity of a truck without unusual wear and tear.



W. K. Ackerman, Engineer, Lewis-Hall Iron Works, Detroit, Mich.

Since time is one of the greatest factors in motor truck efficiency, in selecting body equipment the choice should be with the body which not only carries the maximum load, but offers every facility for unloading. Too much stress can not be laid upon this point.

Because there are so many commodities which require special body equipment, and especially in the absence of any illustrations, the writer confesses his inability to do anything but skim the surface of the subject. The interchangeable stake and express body, however, is at the present time attracting much favorable attention because of its unusual adaptability.

In the heavier hauls where trailers are used, the common evil is that of overtaxing trucks, and here again enters the question of choosing the proper type.

In addition there are many other features which enter into the final analysis and among these are effective scheduling and routing where the delivery of goods entails many stops, the bonus system of promoting driver's efficiency now in vogue, the selection of a careful driver, etc.

Finally, it strikes me that regardless of how much time and study is expended in cost accounting, so far as it relates to the operation of motor trucks, the result in figures will be most unsatisfactory—and in some cases damaging—if at the very outset the mistake is made of not selecting a truck of proper capacity and body equipment as above outlined.

It is to be regretted that the average dealer does not devote sufficient time to this most important question, as it would surely result in a greater number of satisfied users to every truck manufacturer. For example, we are frequently asked to equip chassis with bodies for hauling heavy material which are entirely out of proportion to the capacity of the truck. Such unbalanced equipment, with increased cost of maintenance which is bound to follow, always results in trouble for the manufacturer and dealer and a dissatisfied customer.

In summing up, operating figures are authentic only when based on proper equipment, and where the hauling problem is correctly solved will do much to smooth over the many difficulties encountered by manufacturer and dealer alike. Likewise they will conclusively prove to the most skeptical the superiority of the motor truck over the horse drawn vehicle

TRUCKS REPLACE TEAMS FOR HAULING FRUITS.

Motor trucks have worked a transformation in the fruit growing region of Florida. Here the more prosperous growers bought motor trucks in an effort to speed up fruit shipments. One man states that up to the middle of last season he used 10 teams for hauling fruits from the groves to the packing houses, a distance of from six to 15 miles, two men being required for each team.

He bought four trucks, a one-ton, a two-ton and 2½-ton units, and these now haul the fruits, water for spraying purposes about the groves and for scattering fertilizer. He says they have obviated the need of many men and all but one of the teams, which is retained to get around the places too narrow to operate trucks.

The old team method required from two to three hours longer for carrying a load of fruit. Although he was willing to pay more for the truck operation, results proved it more economical than the teams. With team hauling the men at the packing house were often idle between loads. The trucks changed this condition, as the four of them poured a continuous stream of fruit into the packing house. Goodyear pneumatic tires are used.

TRANSPORTATION'S THIRD LINK IS MOTOR TRUCK.

"The motor truck is the third link in transportation service," says Clifford A. Williams, director of sales of the Kissel Motor Car Co. "While railroad and water transportation may be developed to the highest possible point of efficiency, neither can serve the man who is located 10 miles away. His product must be brought to the railroad or to the dock over the highways or streets before it can be loaded for transportation overland or overseas.

"Almost 100 per cent. of the freight carried on either railroad or boat must first be transported some distance by other means, and it must again be transported some distance at the other end to make delivery. With motor trucks, merchandise is loaded at one door and unloaded at another door, saving a good deal of handling and much delay and depreciation in value of perishable products.

"These problems of transportation have been receiving considerable study and the motor truck manufacturer, salesman and dealer of today are transportation experts; in other words, they sell 'transportation service' rather than a mere piece of machinery. This distinction has placed the motor truck salesman on a high plane, where his opinion is accepted by those who have transportation problems to solve."

WILL BUILD TRUCKS AT NEW HAVEN.

Hotchkiss & Downs, Inc., New Haven, Conn., to manufacture automobiles, trucks, etc., has been incorporated in Connecticut with $50,000 capital stock.

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NEW ENGLAND AS A TRUCK MARKET

Only by Highway Haulage Can Needs of Industries Be Met---Conditions Extremely Favorable for Vehicle Transportation---States Can Absorb at Least 250,000 Machines in Next Five Years.

NO SECTION of the country has greater possibilities for the sale of power vehicles than the New England states. The opportunities for those selling trucks are unquestionably better than are realized in other sections of the country. This applies equally well to those who control the sale of one or more makes for the six states or for limited territory.

Boston is first of all a commercial center of great importance. It is the largest city of New England, is the leather and wool market of the world, the center of the textile industries, and is the second shipping port of the United States. New England is dependent upon mechanical industries and agriculture is secondary. In fact with reference to food production it is far from self-sustaining.

Scattered all over these states are communities of varying sizes that were originally founded because of the possibilities of water power, each with its one or more industries. Some of these are factories extremely large. These must be supplied with raw materials for manufacturing and the people must have the necessaries that are required by them. The finished products must be distributed. This means that there must be constant movement of materials and products to and from these communities, and the railroads have for many years been the main means of transportation.

The New England states have but four principal railroad systems. Two of these serve the greater parts of all the states. These two were competitors and after consolidation practically monopolized freight haulage and the needs of the different localities were disregarded so far as railroad facilities were concerned. This inadequacy of transportation is more and more keenly accentuated. In addition to the inferior service the freight rates have been largely increased. There is no prospect for improvement. The railroads lack resources and business has been greatly handicapped by delay of freightage.

Every business man knows the value of time. Boston is a comparatively short distance from New York. Practically every part of New England is within 12 hours or less of Boston by railroad. But business cannot be transacted without the movement of freights.

New England's Superior Roads.

New England has been progressive in the sense that it has the best roads of the nation. A greater mileage of its highways are improved. All of the commercial centers are connected by road and these are available for the transportation of all kinds of freights. Because the highways are better than elsewhere in the country the cost of freightage is relatively less than it would be for corresponding distances in other states.

The population of New England is concentrated in Massachusetts, Rhode Island and Connecticut, which have approximately 6,000,000 inhabitants. There are in New England 439 cities and towns with populations in excess of 1000. There are 217 towns and cities with populations exceeding 5000, 118 towns and cities with populations between 5000 and 10,000, 59 towns and cities with populations between 10,000 and 25,000, 26 towns and cities with populations between 25,000 and 50,000, nine cities with populations between 50,000 and 100,000, nine cities with populations between 100,000 and 200,000, and one city with a population of between 250,000 and 300,000, one city with a population of approximately 800,000. These figures are based on the census of 1915 and because of large growth of some cities and towns during the last three years they may be accepted as being considerably less than what might be shown by an enumeration of the inhabitants today.

Some Facts of Road Improvement.

Practically all of these towns and cities have regular movement of freight in large volume. Much of this freight could be hauled by highway at a very great economy of time, and compared with present railroad rates at no increase of cost. There are those who are inclined to doubt the possibilities of haulage because of the condition of the highways. Even a cursory examination of the highway statistics of New England will quickly establish the economic value of the roads and the reasons why business men must adopt trucks for a very much larger part of transportation than in other sections of the country.

Excluding the streets of the cities there were Jan. 1, 1915, 86,718 miles of roads in New England, of which 18,038 miles were surfaced. Of the improved mileage at that time 10,896 miles were gravel, 2230 miles macadam, 1771 miles bituminous macadam, 1113 miles sand clay, 42 miles concrete, 1½ miles brick and 1985 miles not classified. Maine, Rhode Island and Connecticut have truck line road systems built entirely at the expense of the state, and the other three states have trunk line systems of roads built by the state, but with the towns contributing toward the cost of construction and maintenance.

In 1914 the total revenues applied to roads in the New England states was $15,435,746; this was an increase of 104.6 per cent. over the expenditure in 1904. This demonstrates the great attention given to road development in these states. The improvement has been largely of the systems connecting the towns and cities, so that motor truck transportation between them can be carried on very economically for long distances.

Great Improvement Certain.

The progression made in highway work since the latest compilation of figures by the United States census, which are quoted above, has been marked. Each year the states have made large appropriations and, until war work necessitated general cessation of all public improvement, the work has been carried on systematically.

Not only this, with the funds that are now and will be for several years available from Federal aid appropriations, there will be even greater activity in road building. What the possibilities are with reference to specific improvements cannot be forecasted with accuracy, but there is no question that every dollar provided by the national government will be matched with a dollar from state funds.

The policy of each state is now to build roads that will endure under heavy traffic. The highway officials realize that power vehicles will be used in greater numbers than ever before and that roads must be constructed that will be enduring. With reference to highway mileage, which is of decided importance, statement should be made that Maine, New Hampshire and Vermont have 51,806 miles of road and Massachusetts, Rhode Island and Connecticut have a total of 34,912 miles. The roads of Massachusetts, Rhode Island and Connecticut are in the order named 45.53, 31.95 and 21.16 per cent. improved (surfaced), and those of Maine, New Hampshire and Vermont are 11.74, 11.83 and 10.12 per cent. improved, according to the latest figures available. Since these were compiled the percentage of improved highways has probably somewhat increased.

The Potential Truck Market.

Now as to the market for trucks. The following tabulations will show the increase in registration during the years of 1917 and 1918, as indicated by the registration in the different states:

State	Registration 1916	Registration 1918	Increase
Maine	1,991	4,200	2,209
*New Hampshire.	1,500	2,711	2,111
Vermont	728	1,872	1,144
Massachusetts	18,919	33,011	14,095
Rhode Island	4,192	4,800	608
*Connecticut	7,759	13,500	5,741
Total	35,084	60,094	25,010

*1916 registration for New Hampshire and 1918 registration for Connecticut estimated.

A partial list of the industries of New England shows the surprising total of 109,967. Regarding these for a moment one learns that practically all of these

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may be assumed to be prospects for the use of power vehicles. The total number of industries enumerated is 114. Obviously this does not by any means include all of the concerns doing business. One cannot, however, assume that all of these might practically use trucks, but many of them could use fleets of machines.

There are varying aspects for considering the use of motor trucks. The supposition they are merely a substitute for horse transportation has dissipated. The man who assumes that his is the only use to be made of them is oblivious of the needs of business men. Beyond the radius of distribution possible with horses trucks can be used for long distances, not only because of economy as compared with railroad transportation, but because of the economy of time and the lessened handling, making tailboard deliveries direct from the shipping points to the points of delivery. The marketing possibilities in New England cannot be estimated closely because of great difficulty of accurately stating the number of business enterprises and determining satisfactorily a reasonable ratio of each classification that could logically be regarded as truck buying prospects. Not only this, the purchasing power of any class cannot be stated because mere classification figures do not afford knowledge of the business done by those represented by it.

By this is meant that of a classification such as coal dealers, to illustrate, the number of firms given does not indicate whether the business done by each can be handled by one or 20 machines. Obviously, the haulage requirements of each will differ, and the range may be very large in some instances. A statement of the capital of each concern would hardly be a gauge, and the only manner that would accurately reflect actual conditions would be separate analysis, which would not be possible.

There is no question that the business men are buying trucks. They want them because there are greater economies from their use. These economies cannot be measured in the same manner because service has very widely differing value to the men requiring it. What is an economy to one man might be extravagance for another. Each vehicle must be so utilized that it will be profitable. The fallacy of using machines as animals are or were used is very generally understood. The necessity of system, organization and accounting is realized. This knowledge is impelling truck owners to obtain the cooperation of those whom they serve, which is bringing about betterment of conditions for loading and unloading.

In the cities the regulation of the traffic is exceedingly beneficial. The supervision necessarily benefits the owners in that greater time economies are possible. With the decrease in number of animal vehicles and the increase of power trucks the street economy is noticeable. This, of course, applied to the communities where there is great traffic, and the reduction of the number of vehicles means greater speed as a rule. Where the traffic is not congested the movement of the traffic is generally accelerated.

Turning to the tabulation of the towns and cities by population one will note that in Maine, New Hampshire and Vermont there are 88 towns of 5000 inhabitants or less, 30 between 5000 and 10,000, 14 between 10,000 and 25,000, three between 25,000 and 50,000, and two between 50,000 and 100,000. If one were to regard as commercial centers in which motor trucks agencies could be located the cities in excess of 25,000 population, he would find five of these in Maine and New Hampshire, but there would be 132 towns with population of 1000 or more, and of these 14 would have between 10,000 and 25,000 and 30 between 5000 and 10,000. But many of the seemingly small towns are business centers of really large importance.

Considering the three southern states of the group, these have a total of 302 towns and cities with population of 1000 or more. Of this total 128 have population of 5000 or less than 88 have between 5000 and 10,000 inhabitants. There are 45 towns and cities with from 10,000 to 25,000 residents. But ignoring all of these and regarding only the cities of 25,000 or more as centers in which agencies might be established, there are 41 with populations of sufficient importance to justify serious attention from the sales manager. This makes in all 46 logical localities in which active representation should be sought, for obviously with all of the other communities the territories of the agents would be much larger than would be indicated by population figures of a single municipality.

The business possibilities for the motor truck agent may be the better realized from an enumeration of the different industrial and commercial interests in these. Obtaining anything like a complete list of these is obviously impossible.

In considering this list one must bear in mind that the smallest store or business is rated equal to the largest store or industry and the list, despite the seemingly very large total, does not by any means reflect sales possibilities. The business prospects for the truck agent are exceedingly numerous and if the energies of any truck manufacturer were directed toward developing the market in these states alone, there would be sufficient return to justify the concentration of endeavor. New England can and will no doubt absorb 250,000 trucks in the next five years, and this is a very conservative estimate when the peculiar conditions existing and the great need of highway transportation are investigated and analyzed.

PHILADELPHIA TRUCK SHOW.

A motor truck show will be held March 17-22 in the Commercial Museum, Philadelphia, under auspices of the Philadelphia Automobile Trade Association. A passenger car show will be held March 8-15.

A. R. Redburn is now sales manager of the truck department of the Walden W. Shaw Livery Co., Chicago.

National Truck and Auto Show the Same Week.

Coincident with the announcement that the National Automobile Chamber of Commerce will hold the national automobile shows next year came the announcement that the passenger car and truck shows will be held the same week, instead of having the truck show follow the passenger car exhibition.

The New York show will open Jan. 3 and the Chicago show two weeks later. It is not believed there will be any difficulty in getting space sufficient for having the passenger car and truck shows at the same time.

Meetings of the National Chamber and the truck manufacturers were held in New York the same day. The truck men discussed the advisability of further standardizing parts of the truck itself, and a committee was appointed to confer with the Society of Automotive Engineers with a view of working out a plan.

There was a discussion of possibilities and first steps toward conventions of sales and service managers respectively, for the truck manufacturers.

The following day the export managers of members met, with J. Walter Drake, chairman of the chamber's export committee, presiding. They discussed problems affecting the foreign business of the industry. Members of government bureaus, specialists, bankers and exporters gave advice.

TRUCKS AND TRACTORS SHOWN AT DETROIT.

The Crosstown Garage, with 100,000 square feet of floor space, said to be the largest garage in the world, housed trucks, cars and tractors worth $1,000,000 at the Detroit Automobile Show. Thirty-three makes of trucks were exhibited. The show was held under the auspices of the Detroit Automobile Dealers' Association. Tractors were shown for a first time at a Detroit show. Business was good.

TRUCK OWNERS OBJECT TO BOSTON TAXING VEHICLES.

Representatives of the Auto Truck Dealers' Association, Master Teamers' Association, the transportation department of the Boston Wool Manufacturers' Association and auto associations appeared before the Massachusetts Legislative Committee on Roads and Bridges in opposition to Mayor Peters' bill seeking to treble the registration fees for motor vehicles.

Corporation Counsel Alexander Whiteside, Chairman John J. Callahan of the Boston Street Commission and James F. Sullivan, division engineer of the Boston Highways Department, favored the bill.

The mayor's plan is to turn half the gross receipts from registration into the state treasury and distribute the other half among the cities and towns.

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TRUCK MODELS, CAPACITIES AND PRICES.

Production of 164 Different Manufacturers, a Total of 530 Machines, Listed Alphabetically by Trade Name. These Are the Revised Quotations, Correct to March 1.

Acme Motor Truck Co., Cadillac, Mich.
Trade Name, Acme.

Model	Tons	Chas. Price	Com. Price
B	1	$1950	.....
A	2	$2750	.....
C	3½	$3650	.....
E	5	$4750	.....

All-American Truck Co., 2952 W. Chicago St., Chicago, Ill.
Trade Name, All-American.

Model	Tons	Chas. Price	Com. Price
A	1	$1295	.....

The O. Armleder Co., 12th, Plum and Charles Sts., Cincinnati, O.
Trade Name, Armleder.

Model	Tons	Chas. Price	Com. Price
HW	2	$2950	.....
KW	3½	$3950	.....

Martin Truck and Body Corp., York, Pa.
Trade Name, Atlas.

Model	Tons	Chas. Price	Com. Price
19	¾	$1160	.....

Atterbury Motor Car Co., Elmwood and Hertel Aves., Buffalo, N. Y.
Trade Name, Atterbury.

Model	Tons	Chas. Price	Com. Price
7R	1½	$2575	.....
7C Standard	2	$2975	.....
7C L. Wh'base	2	$3075	.....
7D Standard	3½	$3875	.....
7D L. Wh'base	3½	$3975	.....
8E	5	$4975	.....

The Autocar Co., Ardmore, Pa.
Trade Name, Autocar.

Model	Tons	Chas. Price	Com. Price
XX1	1½-2	$2050	.....

Available Truck Co., Chicago, Ill.
Trade Name, Available.

Model	Tons	Chas. Price	Com. Price
H2	2	.....	.....
H3	3½	.....	.....

Beck-Hawkeye Motor Truck Works, 901-13 First Ave., W., Cedar Rapids, Ia.
Trade Name, Beck.

Model	Tons	Chas. Price	Com. Price
A	1	$1550	.....
B	1½	$1950	.....
C	2	$2250	.....
D	3	$2650	.....

Bell Motor Car Co., Center and P. R. R., York, Pa.
Trade Name, Bell.

Model	Lbs.	Chas. Price	Com. Price
G	1200	$1150	.....

Bessemer Motor Truck Co., Grove City, Pa.
Trade Name, Bessemer.

Model	Tons	Chas. Price	Com. Price
G	1	$1575	.....
H	1½	$1945	.....
J	2	$2490	.....
J-2	2½	$2785	.....
K	3½	$3450	.....

Bethlehem Motors Corp., Allentown, Pa.
Trade Name, Bethlehem.

Model	Tons	Chas. Price	Com. Price
D	1½	$1965	$2135
E	2½	$2365	$2555
F	3½	$3465	.....

Brinton Motor Truck Co., 5740 Cherry St., Philadelphia, Pa.
Trade Name, Brinton.

Model	Tons	Chas. Price	Com. Price
H	1	$1500	.....
F	2½	$3000	.....

Briscoe Motor Corp., 162 Leroy Ave., Jackson, Mich.
Trade Name, Briscoe.

Model	Tons	Chas. Price	Com. Price
B-24	Open B	$885	.....
B-24	Closed B	$910	.....

Brockway Motor Truck Co., Railroad, Cortland, N. Y.
Trade Name, Brockway.

Model	Tons	Chas. Price	Com. Price
S	1½	$2050	.....
J-2	1½	$2450	.....
K-3	2	$2850	.....
R	2½	$3750	.....
T	5	$4850	.....

Chevrolet Motor Co., 57th at Broadway, New York, N. Y.
Trade Name, Chevrolet.

Model	Tons	Chas. Price	Com. Price
.....	1	$1325	.....
Express	1	$1460	.....
Ex. with top	1	$1545	.....

Collier Motor Truck Co., Bellevue, O.
Trade Name, Collier.

Model	Tons	Chas. Price	Com. Price
16	1¼	$1375	.....

The Clyde Cars Co., Clyde, O.
Trade Name, Clydesdale.

Model	Tons	Chas. Price	Com. Price
65	2	$2975	.....
90	3½	$3950	.....
120B	5	$4975	.....

Columbia Motor Truck and Trailer Co., Pontiac, Mich.
Trade Name, Columbia.

Model	Tons	Chas. Price	Com. Price
E	2-2½	$2350	$2585
ET	6	$3110	$3185
F	1-1½	$1750	$1970
3T trailer 4 w.	3	$850	$1000

The Commerce Motor Car Co., 26 Mackie St., Detroit, Mich.
Trade Name, Commerce.

Model	Tons	Chas. Price	Com. Price
EA	1-1½	$1500	$1565
EH	1-1½	.....	$1620
ES	1-1½	.....	$1655
EPA	1½-2	$1895	$1960
EPH	1½-2	$1895	$2025
EPS	1½-2	$1895	$2050

Abbott-Downing Truck and Body Co., Concord, N. H.
Trade Name, Concord.

Model	Tons	Chas. Price	Com. Price
A	1½	$2550	$2550
B	2½	$3000	$3000

Conestoga Motor Truck Co., Duke and Vine Sts., Lancaster, Pa.
Trade Name, Conestoga.

Model	Tons	Chas. Price	Com. Price
20	1	$1850	.....
30	2	$2550	.....

Corbitt Motor Truck Co., R. F. D. No. 3, Henderson, N. C.
Trade Name, Corbitt.

Model	Tons	Chas. Price	Com. Price
AA	5	$450	.....
A	3½	$4000	.....
B	2½	$3200	.....
C	2	$3000	.....
D	1½	$2400	.....
E	1	$2000	.....

Corliss Motor Truck Co., Corliss, Wis.
Trade Name, Corliss.

Model	Tons	Chas. Price	Com. Price
.....	½	$715	.....

Couple Gear Freight Wheel Co., Bush Ave., Grand Rapids, Mich.
Trade Name, Couple Gear.
Electric.

Model	Tons	Chas. Price	Com. Price
H	3½	$4750	.....
A	5	$5250	.....
LO	7	$5900	.....
Gas Electric.			
HC	3½	$6100	$6400
AC	5	$6700	$7100
LDC	7	$7350	$7800

Dart Truck and Tractor Corp., Waterloo, Ia.
Trade Name, Dart.

Model	Tons	Chas. Price	Com. Price
E	1	$2100	.....
CC4	2	$2950	.....
L	3½	$4000	.....

Day-Elders Motors Corp., 164 Ogden St., Newark, N. J.
Trade Name, Day-Elder.

Model	Tons	Chas. Price	Com. Price
J	¾	$1045	.....
A	1	$1775	.....
B	1½	$2075	.....
D	2	$2450	.....
C	2½	$2750	.....
F	3½	$3450	.....
E	5	$4500	.....

Dearborn Truck Co., 2515 W. 35th St., Chicago, Ill.
Trade Name, Dearborn.

Model	Tons	Chas. Price	Com. Price
A	1	$975	.....
F	1½	$1980	.....

Turnbull Motor Truck and Wagon Co., Defiance, O.
Trade Name, Defiance.

Model	Tons	Chas. Price	Com. Price
B	1½	$1795	.....
C	2	$1995	.....
D	3½	$3500	.....

De Kalb Wagon Co., De Kalb, Ill.
Trade Name, De Kalb.

Model	Tons	Chas. Price	Com. Price
E2	2	$2100	.....
.....	2½	$2600	.....

De Martini Motor Car Co., 375-9 Bay St., San Francisco, Cal.
Trade Name, De Martini.

Model	Tons	Chas. Price	Com. Price
A17W	1	$2250	.....
C17W	2	$2750	.....
E17W	3	$3650	.....
G17W	4	$4250	.....

Denby Motor Truck Co., 400 Holbrook Ave., Detroit, Mich.
Trade Name, Denby.

Model	Tons	Chas. Price	Com. Price
12	1	$1650	.....
13	2	$2350	.....
25	2½	$3000	.....
27	3½	$4150	.....
210	5	$4900	.....

Diamond T Motor Car Co., 4501 W. 26th St., Chicago, Ill.
Trade Name, Diamond T.

Model	Tons	Chas. Price	Com. Price
J5	1	$2125	.....
J4	1½	$2550	.....
J3	2	$2925	.....
LB	3½	$4150	.....
R	5	$4950	.....

Dispatch Motor Car Co., 1200 14th Ave., Minneapolis, Minn.
Trade Name, Dispatch.

Model	Tons	Chas. Price	Com. Price
G	1½	$1200	.....

Doane Motor Truck Co., 428 Third St., San Francisco, Cal.
Trade Name, Doane.

Model	Tons	Chas. Price	Com. Price
.....	2½	$3500	.....
.....	6	$5650	.....

Dodge Brothers, Detroit, Mich.
Trade Name, Dodge.

Model	Tons	Chas. Price	Com. Price
.....	½	$1085	.....

Dorris Motor Car Co., 4100 Laclede St., St. Louis, Mo.
Trade Name, Dorris.

Model	Tons	Chas. Price	Com. Price
K4	2	$2985	.....
K7	3½	$3800	.....

Double Drive Truck Co., W. Kinzie St., Chicago, Ill.
Trade Name, Double Drive.

Model	Tons	Chas. Price	Com. Price
B	3	$4000	.....
C	1½	$2500	.....

Douglas Motors Corp., 30th and Sprague Sts., Omaha, Neb.
Trade Name, Douglas.

Model	Tons	Chas. Price	Com. Price
.....	1½	$2000	.....

Duplex Truck Co., Lansing, Mich.
Trade Name, Duplex Four Wheel Drive.

Model	Tons	Chas. Price	Com. Price
E	3½	$4000	.....

Durable Motor Truck Co., Hammond, Ind.
Trade Name, Durable.

Model	Tons	Chas. Price	Com. Price
B2-18	1½	$2040	.....

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Mills-Ellsworth Co., Keokuk, Ia.
Trade Name, Ellsworth.

Model	Tons	Chas. Price	Com. Price
25A	½	....	$855

Fageol Motors Co., 107th Ave. and Hollywood Blvd., Oakland, Cal.
Trade Name, Fageol.

Model	Tons	Chas. Price	Com. Price
.....	2	$3300	.....
.....	3½	$4250	.....
.....	5	$5100	.....

Famous Trucks, Inc., Broad St., St. Joseph, Mich.
Trade Name, Famous.

Model	Tons	Chas. Price	Com. Price
B10	1	$1690	.....
B12	1½	$2250	.....

Fargo Motor Car Co., 1162-66 W. 22nd St., Chicago, Ill.
Trade Name, Fargo.

Model	Tons	Chas. Price	Com. Price
P	2	$2200	.....

Federal Motor Truck Co., Federal St., Detroit, Mich.
Trade Name, Federal.

Model	Tons	Chas. Price	Com. Price
S	1	$1900	.....
T	1½	$2350	.....
U	2	$2600	.....
W	3½	$3350	.....
X	5	$4400	.....

Ford Motor Co., Woodward Ave., Detroit, Mich.
Trade Name, Ford.

Model	Tons	Chas. Price	Com. Price
T	1	$550	.....

Four Wheel Drive Auto Co., Clintonville, Wis.
Trade Name, FWD.

Model	Tons	Chas. Price	Com. Price
B	3	$4500	.....

Fulton Motor Truck Co., Long Island, Farmingdale, N. Y.
Trade Name, Fulton.

Model	Tons	Chas. Price	Com. Price
FX	1½	$1850	.....

Gabriel Motor Truck Co., 315 W. Prospect St., Cleveland, O.
Trade Name, Gabriel.

Model	Tons	Chas. Price	Com. Price
C	1	$1950	.....
E	2	$3250	.....
F	3	$4300	.....

The Garford Motor Truck Co., Lima, O.
Trade Name, Garford.

Model	Tons	Chas. Price	Com. Price
75-C	1	$2500	.....
66-B	1½	$3000	.....
70-B	2	$3300	.....
77-C	3½	$4300	.....
68	5	$5000	.....
69	6	$5300	.....

General Motors Truck Co., Pontiac, Mich.
Trade Name, G. M. C.

Model	Tons	Chas. Price	Com. Price
16	¾	$1495	.....
21	1	$2025	.....
31A&B	1½	$2395	.....
41A&B	2	$2725	.....
71A&B	3½	$3750	.....
71B	3½	$3800	.....
101A	5	$4350	.....
101B	5	$4400	.....

Geneva Wagon Co., Geneva, N. Y.
Trade Name, Geneva.

Model	Tons	Chas. Price	Com. Price
B	¾	$700	.....
C	¾	$750	.....

Gersix Manufacturing Co., 2913-26 Fifth Ave., Seattle, Wash.
Trade Name, Gersix.

Model	Tons	Chas. Price	Com. Price
G	2½	$3150	.....
H	2½	$3150	.....
K	2½	$3150	.....

Chicago Pneumatic Tool Co., 1030 Fisher Bldg., Chicago, Ill.
Trade Name, Giant.

Model	Tons	Chas. Price	Com. Price
15	1	$1850	.....
.....	1½	$2250	.....
.....	2	$2850	.....
.....	2	$2900	.....
.....	3½	$3850	.....

Globe Motor Truck Syndicate, Ltd., 18th and Brady Sts., East St. Louis, Ill.
Trade Name, Globe.

Model	Tons	Chas. Price	Com. Price
A	1	$1625	.....
B	1½	$1990	.....
C	2	$2400	.....
CC	2	$2500	.....

Gramm-Bernstein Motor Truck Co., Lima, O.
Trade Name, Gramm-Bernstein.

Model	Tons	Chas. Price	Com. Price
15	1½	$1895	.....
1½	1½	$2450	.....
2	2	$2750	.....
2½	2½	$3350	.....
3½	3½	$4000	.....
5	5	$5000	.....

Grant Motor Car Corporation, Colt and Kirby Sts., Cleveland, O.
Trade Name, Grant.

Model	Tons	Chas. Price	Com. Price
10	1½	$1885	.....
11	1½	$1935	.....
12	1800 lbs.	$1065	$1125
15	2	$2150	.....
16	2	$2250	.....

Hahn Motor Truck and Wagon Co., S. Fourth St., Hamburg, Pa.
Trade Name, Hahn.

Model	Tons	Chas. Price	Com. Price
B	¾	$1225	.....
C	1	$1950	.....
D	1½	$2225	.....
E	2	$2500	.....
F	3½	$3250	.....
G	1	$1375	.....
H	2	$1950	.....

Lewis-Hall Iron Works, Ferry and G. T. R. R., Detroit, Mich.
Trade Name, Hall.

Model	Tons	Chas. Price	Com. Price
2 ton	2	$2675	.....
3½ ton	3½	$3500	.....
5 ton worm	5	$4500	.....
5 ton chain	5	$4500	.....

Harvey Motor Truck Co., Harvey, Ill.
Trade Name, Harvey.

Model	Tons	Chas. Price	Com. Price
WFA	2½	$3050	.....
WHA	3½	$3950	.....
WKA	5	$5050	.....

Hawkeye Truck Co., Sioux City, Ia.
Trade Name, Hawkeye.

Model	Tons	Chas. Price	Com. Price
K	1½	$1900	.....
M	2	$2650	.....

Henderson Bros. Co., Inc., 2067 Mass. Ave., N. Cambridge, Mass.
Trade Name, Henderson.

Model	Tons	Chas. Price	Com. Price
C	..	$1350	.....
D	..	$1750	.....
E	..	$1850	.....

Hendrickson Motor Truck Co., 3538 Wabash Ave., Chicago, Ill.
Trade Name, Hendrickson.

Model	Tons	Chas. Price	Com. Price
G	2	$2850	.....
H	3½	$3650	.....

Higrade Motors Co., Harbor Springs, Mich.
Trade Name, Higrade.

Model	Tons	Chas. Price	Com. Price
A17	¾	$1850	.....
A18	1	$2100	.....

Hoover Wagon Co., York, Pa.
Trade Name, Hoover.

Model	Lbs.	Chas. Price	Com. Price
15B	1500	$1625	.....
20A	2250	$2250	.....

Hurlburt Motor Truck Co., Third Ave. and Harlem River, New York, N. Y.
Trade Name, Hurlburt.

Model	Tons	Chas. Price	Com. Price
..	2	$3500	.....
..	3½	$4250	.....
..	5	$5250	.....

Independent Motor Co., 1636 Wilson Ave., Youngstown, O.
Trade Name, Independent.

Model	Tons	Chas. Price	Com. Price
F	1	$1685	.....
G	2	$2300	.....

Indiana Truck Corp., Marion, Ind.
Trade Name, Indiana.

Model	Tons	Chas. Price	Com. Price
..	1	$2150	.....
..	1½	$2600	.....
..	2	$2800	.....
..	3½	$3450	.....
..	5	$4500	.....

International Harvester Co., 606 S. Michigan Ave., Chicago, Ill.
Trade Name, International.

Model	Tons	Chas. Price	Com. Price
H	¾	$1550	.....
F	1	$1850	.....
K	1½	$2200	.....
G	2	$2600	.....

Jones Motor Car Co., 210 W. Douglas Ave., Wichita, Kan.
Trade Name, Jones.

Model	Tons	Chas. Price	Com. Price
.....	1	$1395	.....

Nelson Motor Truck Co., Saginaw, Mich.
Trade Name, Jumbo.

Model	Tons	Chas. Price	Com. Price
.....	2	$2500	.....

The Kelly-Springfield Motor Truck Co., Sheridan Ave. and Burt St., Springfield, O.
Trade Name, Kelly-Springfield.

Model	Tons	Chas. Price	Com. Price
K-31	1½	$2750	.....
K-32	1½	$2750	.....
K-35	2½	$3250	.....
K-36	2½	$3250	.....
K-40	3½	$4250	.....
K-45	4	$4400	.....
K-50	5	$4900	.....
K-60	6	$5200	.....

Kissel Motor Car Co., Hartford, Wis.
Trade Name, Kissel.

Model	Tons	Chas. Price	Com. Price
Gen. Utility	1½	$2073.50	.....
Freighter	2	$2832.50	.....
Heavy duty	3½	$3905.00	.....
5 ton	5	$4785.00	.....

Kleiber & Co., Inc., 11th and Folsom Sts., San Francisco, Cal.
Trade Name, Kleiber.

Model	Tons	Chas. Price	Com. Price
AA	1-1½	$2400	.....
A	1½-2	$2650	.....
BB	2-2½	$2950	.....
B	2½-3	$3500	.....
C	3¼-4	$4100	.....
D	5	$5100	.....

H. J. Koehlers Motors Corp., 155 Ogden St., Newark, N. J.
Trade Name, Koehler.

Model	Tons	Chas. Price	Com. Price
K	1¼	$1450	.....
L	2½	$1985	.....
M	2½	$2785	.....
O	3½	$3400	.....
R	5	$4200	.....

Lane Motor Truck Co., 1812 Fulford St., Kalamazoo, Mich.
Trade Name, Lane.

Model	Tons	Chas. Price	Com. Price
G	1½	$2250	.....
H	2	$2975	.....
K	3½	$3900	.....

Lange Motor Truck Co., Cor. 5th and Hamilton Aves., Pittsburgh, Pa.
Trade Name, Lange.

Model	Tons	Chas. Price	Com. Price
E	2-2½	$2950	$3200-$3500

Larrabee-Deyo Motor Truck Co., Inc., 23 Washington St., Binghamton, N. Y.
Trade Name, Larrabee-Deyo.

Model	Tons	Chas. Price	Com. Price
M	1	$1950	.....
C & D	2½	$3000	.....
A	3½	$3950	.....
T	5	$4750	.....

Lippard-Stewart Motor Car Co., 226 W. Utica St., Buffalo, N. Y.
Trade Name, Lippard-Stewart.

Model	Tons	Chas. Price	Com. Price
..	¾	$1900	.....
..	1	$2250	.....
..	1½	$2850	.....
..	2	$3050	.....

Loyal Motor Truck Co., W. 6th Ave., Lancaster, O.
Trade Name, Loyal.

Model	Tons	Chas. Price	Com. Price
..	½	$865	.....
Special	¾	$1025	.....
..	1	$1300	.....

Luverne Automotive Co., Maple and McKenzie Sts., Luverne, Minn.
Trade Name, Luverne.

Model	Tons	Chas. Price	Com. Price
..	2	$1800	....

Maccar Truck Co., Providence Ave., Scranton, Pa.
Trade Name, Maccar.

Model	Tons	Chas. Price	Com. Price
L	1½	$2750	.....
L	2½	$3300	.....
M	3½	$4100	.....
U	5½	$5000	.....

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International Motor Co., 252 W. 64th St., New York, N. Y.
Trade Name, Mack.

Model	Tons	Chas. Price	Com. Price
AB	1	$2400	.....
AB	1½	$2800	.....
AB	2	$3000	.....
AC	3½	$4600	.....
AC	5½	$5250	.....
AC	7½	$5500	.....

Mack Tractors.

Model	Tons	Chas. Price	Com. Price
AC	7	$4600	.....
AC	11	$5250	.....
AC	15	$5500	.....

O'Connell-Manly Truck Co., Waukegan, Ill.
Trade Name, Manly.

Model	Tons	Chas. Price	Com. Price
30	1½	$2050	.....
40	2	$2350	.....
50	2½	$2800	.....
60	3	$3350	.....

Master Trucks, Inc., 3132-38 Wabash Ave., Chicago, Ill.
Trade Name, Master.

Model	Tons	Chas. Price	Com. Price
JI	1½	$1890	.....
JW	1½	$1990	.....
M	2	$2390	.....
C	2	$2490	.....
W	2	$2590	.....
WL	2	$2690	.....
A	3½	$3890	.....
B	5	$4890	.....

Maxwell Motor Co., Inc., Oakland Ave., Detroit, Mich.
Trade Name, Maxwell.

Model	Tons	Chas. Price	Com. Price
Maxwell chas.	1	$1085	$1085
Chas., cab, w'd	1	$1085	$1125
Stake	1	$1085	$1180
Box	1	$1085	$1175
Express	1	$1085	$1195

Menominee Motor Truck Co., Broadway and Michigan Ave., Menominee, Mich.
Trade Name, Menominee.

Model	Tons	Chas. Price	Com. Price
..	1	$1890	.....
H	1½	$2475	.....
D	2	$2950	.....
G	3½	$3880	.....
J	5	$4950	.....

Midland Motor Car and Truck Co., Oklahoma City, Okla.
Trade Name, Midland.

Model	Tons	Chas. Price	Com. Price
MT	2	$3000	.....
MS	2½	$3150	.....

Moreland Motor Truck Co., 1701 N. Main St., Los Angeles, Cal.
Trade Name, Moreland.

Model	Tons	Chas. Price	Com. Price
19-B	1½	$2650	.....
19-C	2½	$3400	.....
19-G	4	$4375	.....
19-J	5	$4725	.....

Muskegon Engine Co., Muskegon, Mich.
Trade Name, Muskegon.

Model	Tons	Chas. Price	Com. Price
20	2	$2325	.....

E. A. Myers Co., 4101 Senate St., Pittsburgh, Pa.
Trade Name, Myers.

Model	Tons	Chas. Price	Com. Price
50	1	$1495	.....
55	1	$1460	.....
70	1½	$1750	.....
75	1½	$1700	.....

Napoleon Motors Co., E. Eighth St., Traverse City, Mich.
Trade Name, Napoleon.

Model	Tons	Chas. Price	Com. Price
9	1	$1285	$1449
11	1½	$1485	$1649

Nash Motors Co., Kenosha, Wis.
Trade Name, Nash.

Model	Tons	Chas. Price	Com. Price
2018	1	$1650	.....
3018	2	$2175	.....
Quad	2	$3250	.....

New England Truck Co., Fitchburg, Mass.
Trade Name, Netco.

Model	Tons	Chas. Price	Com. Price
D	2	$3000	$3200
H	2½	$3400	$3600

Tegetmeier & Reipe Co., 771 First Ave., New York, N. Y.
Trade Name, New York.

Model	Tons	Chas. Price	Com. Price
M	1½	$2600	.....
N	2	$2800	.....

Noble Motor Truck Corp., Kendallville, Mich.
Trade Name, Noble.

Model	Tons	Chas. Price	Com. Price
NW	2½	$2675	.....
NW4	4	$3750	.....

Starr Carriage Co., First and Stacy Sts., Seattle, Wash.
Trade Name, Northwestern.

Model	Tons	Chas. Price	Com. Price
W2	2	$2950	.....

Norwalk Motor Car Co., Martinsburg, Va.
Trade Name, Norwalk.

Model	Tons	Chas. Price	Com. Price
..	1	$1495	.....
..	1½	$1750	.....

Oklahoma Auto Mfg. Co., North Muskogee, Okla.
Trade Name, O. K.

Model	Tons	Chas. Price	Com. Price
2T	3	$3250	.....
2T	2	$2650	.....
1½T	1½	$2450	.....

Kentucky Wagon Mfg. Co., Third and K Sts., Louisville, Ky.
Trade Name, Old Hickory.

Model	Tons	Chas. Price	Com. Price
..	¾	$995	.....

Old Reliable Motor Truck Co., 3913-27 Michigan Ave., Chicago, Ill.
Trade Name, Old Reliable.

Model	Tons	Chas. Price	Com. Price
W 15	1½	$2350	.....
W 25	2½	$3250	.....
W 35	3½	$4000	.....
W 50	5	$5000	.....
C 50	5	$5000	.....
C 70	7	$6000	.....

Oneida Motor Truck Co., Webster Ave., Green Bay, Wis.
Trade Name, Oneida.

Model	Tons	Chas. Price	Com. Price
A	1	$2290	.....
B	1½	$2650	.....
C	2	$3000	.....
D	3½	$3700	.....
E	5	$4700	.....

Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.
Trade Name, Oshkosh 4-Wheel Drive.

Model	Tons	Chas. Price	Com. Price
A	2	$3500	.....

Willys-Overland Co., Toledo, O.
Trade Name, Overland.

Model	Lbs.	Chas. Price	Com. Price
Panel	800 lbs.	$1000	.....
Express	800 lbs.	$985	.....
Express	1200 lbs.	$1075	.....

Packard Motor Car Co., Blvd. and Belt Line, Detroit, Mich.
Trade Name, Packard.

Model	Tons	Chas. Price	Com. Price
1-½E	1½-1¾	$3000	.....
2-E	2-2½	$3400	.....
3-E	3-3½	$4100	.....
4-E	4-4½	$4450	.....
5-E	5-5½	$5150	.....
6-E	6-6½	$5400	.....

Paige-Detroit Motor Car Co., Fort and McKinstry Sts., Detroit, Mich.
Trade Name, Paige.

Model	Tons	Chas. Price	Com. Price
50-18	2	$2950	.....
51-18	3½	$3950	.....

Palmer-Meyer Motor Car Co., 5027 McKissock Ave., St. Louis, Mo.
Trade Name, Palmer.

Model	Tons	Chas. Price	Com. Price
..	1	$1685	.....
..	2	$2495	.....

Panhard Motors Co., Fulton St., Grand Haven, Mich.
Trade Name, Panhard.

Model	Tons	Chas. Price	Com. Price
A	1	$1195	.....
B	1½	$1395	.....
E	2½	$2350	.....

Parker Motor Truck Co., 608 Linus St., Milwaukee, Wis.
Trade Name, Parker.

Model	Tons	Chas. Price	Com. Price
2 ton	4000	$3150	.....
3 ton	6000	$3700	.....
4 ton	8000	$4250	.....
5 ton	10,000	$5000	.....

Hebb Motors Co., 1385 P St., Lincoln, Neb.
Trade Name, Patriot.

Model	Tons	Chas. Price	Com. Price
Lincoln	1½	$2150	.....
Washington	2½	$3150	.....

Peerless Motor Car Co., Quincy Ave. and S. E. 93d St., Cleveland, O.
Trade Name, Peerless.

Model	Tons	Chas. Price	Com. Price
..	3	$4125	.....
..	4	$4150	.....
..	5	$4700	.....

Piedmont Motor Car Co., Inc., Cleveland Ave., Lynchburg, Va.
Trade Name, Piedmont.

Model	Tons	Chas. Price	Com. Price
..	1½	$1650	.....

The Pierce-Arrow Motor Car Co., 1695 Elmwood Ave., Buffalo, N. Y.
Trade Name, Pierce-Arrow.

Model	Tons	Chas. Price	Com. Price
R-9	5	$5500	.....
X-4	2	$3750	.....

Minnesota Machine and Foundry Co., Minneapolis, Minn.
Trade Name, Pony.

Model	Tons	Chas. Price	Com. Price
Pony, open ex.	¼	$320	$360
Pony, cov. ex.	¼	$320	$400

Rainier Motor Corp., Flushing, Long Island, N. Y.
Trade Name, Rainier.

Model	Tons	Chas. Price	Com. Price
R5	½	$1250	.....
R2	¾	$1350	.....
R7	¾	$1550	.....
R4	2¼	$1595	.....
R6	1½	$1890	.....
R8	2	$2250	.....

Rennoc-Leslie Motor Co., 2007 W. Allegheny St., Philadelphia, Pa.
Trade Name, Rennoc.

Model	Tons	Chas. Price	Com. Price
..	2½	$2895	.....

Reliance Motor Truck Co., Appleton, Wis.
Trade Name, Reliance.

Model	Tons	Chas. Price	Com. Price
C	1½	$2500	.....

Reo Motor Car Co., Lansing, Mich.
Trade Name, Reo.

Model	Tons	Chas. Price	Com. Price
..	1½	$1250	.....

Republic Motor Truck Co., Inc., Alma, Mich.
Trade Name, Republic.

Model	Tons	Chas. Price	Com. Price
Dispatch	¾	$1095	.....
Special	1	$1295	.....
10X	1	$1535	.....
11X	1½	$1885	.....
19	2-2½	$2395	.....
20	3½	$3450	.....
V	5	$4750	.....

Reya Co., Napoleon, O.
Trade Name, Reya.

Model	Tons	Chas. Price	Com. Price
A18	¾	$995	.....

The Locomobile Co. of America, 2 Main St., Bridgeport, Conn.
Trade Name, Riker.

Model	Tons	Chas. Price	Com. Price
B-150	3	$4600	.....
B-170	3	$4650	.....
B-190	3	$4700	.....
BB-150	4	$4700	.....
BB-170	4	$4750	.....
BB-190	4	$4800	.....

Rowe Motor Mfg. Co., Lancaster, Pa.
Trade Name, Rowe.

Model	Tons	Chas. Price	Com. Price
C. D. W.	2	$3000	.....
C. D. W.	2½	$3250	.....
D. E. W.	3½	$3800	.....
F. W.	5	$4900	.....
G. W.	3	$4500	.....

Royal Motor Truck Co. of N. Y., 112 8th Ave., New York, N. Y.
Trade Name, Royal.

Model	Tons	Chas. Price	Com. Price
..	1	$2400	.....
..	1½	$2800	.....
..	2	$3200	.....
..	2½	$3500	.....
..	3½	$4200	.....
..	5	$5000	.....
..	6	$5400	.....
..	7	$6500	.....

Sandow Motor Truck Co., 3333 W. Grand Ave., Chicago, Ill.
Trade Name, Sandow.

Model	Tons	Chas. Price	Com. Price
G	1	$1795	.....
CG	1¼	$2090	.....
H	1½	$2375	.....
JS	2	$2650	.....
J	2	$2975	.....
K	3½	$3995	.....

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L	5	$4775	.....

Samford Motor Truck Co., St. Marks Ave., Syracuse, N. Y.
Trade Name, Samford.

Model	Tons	Chas. Price	Com. Price
W-25	2½	$3000	.....
W-35	3½	$3975	.....
W-50	5	$4750	.....

G. A. Schacht Motor Truck Co., Gest and Evans Sts., Cincinnati, O.
Trade Name, Schacht.

Model	Tons	Chas. Price	Com. Price
..	2	$3150	.....
..	2½	$3500	.....
..	3½	$3950	.....
..	5	$4950	.....

Schwartz Motor Truck Co.
Pearl and Chestnut Sts., Reading, Pa.
Trade Name, Schwartz.

Model	Tons	Chas. Price	Com. Price
..	1½	$2175	.....
..	2½	$2675	.....

Selden Motor Vehicle Co., University Ave. and Probert St., Rochester, N. Y.
Trade Name, Selden.

Model	Tons	Chas. Price	Com. Price
TXR	1	$2000	.....
TWL	1	$2200	.....
JCB	2	$2850	.....
JWB	2	$3050	.....
NL	3½	$3850	.....
DL	5	$5000	.....

Service Motor Truck Co., Wabash, Ind.
Trade Name, Service.

Model	Tons	Chas. Price	Com. Price
220	1	$2100	.....
240	2	$3000	.....
270	3½	$3900	.....
275 (special)	3½	$4200	.....
300	5	$5000	.....

Signal Motor Truck Co., Corner Connors Rd. and Charlevoix Ave., Detroit, Mich.
Trade Name, Signal.

Model	Tons	Chas. Price	Com. Price
F	1-1¼	$2400	.....
H	1½	$2700	.....
J	2-2½	$3100	.....
JL (L. wb.)	2-2½	$3175	.....
M	3½	$4100	.....
ML (L. wb.)	3½	$4200	.....
R	5	$5100	.....

Standard Motor Truck Co., 315 Bellevue Ave., Detroit, Mich.
Trade Name, Standard.

Model	Tons	Chas. Price	Com. Price
76	2	$2800	.....
66	3½	$3675	.....
86	5	$4650	.....

Sterling Motor Truck Co., 46th Ave. and Rogers St., Milwaukee, Wis.
Trade Name, Sterling.

Model	Tons	Chas. Price	Com. Price
..	2½	$3300	.....
..	3½	$4325	.....
..	5	$5100	.....
..	7	$5600	.....

Stewart Motor Corp., 413 E. Delevan St., Buffalo, N. Y.
Trade Name, Stewart.

Model	Tons	Chas. Price	Com. Price
6	¾	$950	$1095
7	2	$2575	$2750
8	1	$1575	$1730
9	1½	$1975	$2145
10	3½	$3500	$3675

Studebaker Corp., South Bend, Ind.
Trade Name, Studebaker.

Model	Tons	Chas. Price	Com. Price
SF	½	$1045	.....
..	1	$1400	.....

Sullivan Motor Truck Corp., 1703 East Ave., Rochester, N. Y.
Trade Name, Sullivan.

Model	Tons	Chas. Price	Com. Price
F	1½	$2350	.....
E	2	$2850	.....
EL	2	$2950	.....

Superior Motor Truck Co., Stewart Ave., Atlanta, Ga.
Trade Name, Superior.

Model	Tons	Chas. Price	Com. Price
A	1	$1600	.....
C	2	$2275	.....

Texas Motor Car Assn., Fort Worth, Tex.
Trade Name, Texan.

Model	Tons	Chas. Price	Com. Price
T	1½	$1425	$1525
CX36	¾	$1100	$1100

The Tiffin Wagon Co., Harrison St., Tiffin, O.
Trade Name, Tiffin.

Model	Tons	Chas. Price	Com. Price
A	¾	$1100	.....
GW	1½	$2125	.....
MW	2½	$2850	.....
PW	3½	$3760	.....
RW	5	$5000	.....
SW	6	$5200	.....

Titan Truck Co., 35 25th St., Milwaukee, Wis.
Trade Name, Titan.

Model	Tons	Chas. Price	Com. Price
3½	3½	$4300	.....
5-6 ton	6	$5150	.....

Tower Motor Truck Co., Greenville, Mich.
Trade Name, Tower.

Model	Tons	Chas. Price	Com. Price
F	2	$2975	.....
G	3½	$4100	.....

Trabold Truck Mfg. Co., 810-12 Railroad Ave., Johnstown, Pa.
Trade Name, Trabold.

Model	Tons	Chas. Price	Com. Price
TJ	1	$1200	.....

Traffic Motor Truck Corp., St. Louis, Mo.
Trade Name, Traffic.

Model	Tons	Chas. Price	Com. Price
..	2	$1395	.....

Transport Truck Co., Mt. Pleasant, Mich.
Trade Name, Transport.

Model	Tons	Chas. Price	Com. Price
50	2	$2585	.....

Triangle Motor Truck Co., St. Johns, Mich.
Trade Name, Triangle.

Model	Tons	Chas. Price	Com. Price
A	1½	$2185	.....
B	2½	$2850	.....

Twin City Four Wheel Drive Co., Inc., 2482 University Ave., St. Paul, Minn.
Trade Name, Twin City Four Wheel Drive.

Model	Tons	Chas. Price	Com. Price
B	3½	$4750	.....
A	5	$5250	.....

Union Motor Truck Co., Second and Water Sts., Bay City, Mich.
Trade Name, Union.

Model	Tons	Chas. Price	Com. Price
BM	2½	$2375	.....
BL	2½	$2375	.....
C	4	$3500	.....

United States Motor Truck Co., Cincinnati, O.
Trade Name, United States.

Model	Tons	Chas. Price	Com. Price
E	2½	$2800	.....
H	2½	$3250	.....
D	3½	$3500	.....
J	3½	$3950	.....
K	5	$4850	.....

Universal Service Co., 1120 Grand River, Detroit, Mich.
Trade Name, Universal.

Model	Tons	Chas. Price	Com. Price
A	3	$3400	.....
D	2	$2800	.....
C	1½	$2000	.....
L	3½	$3700	.....

Velie Motor Corp., Velie Place, Moline, Ill.
Trade Name, Velie.

Model	Tons	Chas. Price	Com. Price
24, special	¾	$1700	.....
25B	2	$2950	.....
26B	3½	$3900	.....

Viall Motor Car Co., 19 E. 111th St., Chicago, Ill.
Trade Name, Viall.

Model	Tons	Chas. Price	Com. Price
..	2	$2500	.....

Vim Motor Truck Co., 23rd and Market Sts., Philadelphia, Pa.
Trade Name, Vim.

Model	Tons	Chas. Price	Com. Price
..	½	$945	.....
25	1	$2195	.....
26	¾	$1200	.....
22	2	$3250	.....
23	3	$3950	.....

Walter Motor Truck Co., 110 West End Ave., New York, N. Y.
Trade Name, Walter.

Model	Tons	Chas. Price	Com. Price
..	5	$5500	.....

Ward LaFrance Truck Co., Inc., Elmira, N. Y.
Trade Name, Ward La France.

Model	Tons	Chas. Price	Com. Price
2A	2	$3350	.....
3A	3½	$3750	.....
3½ A	3½	$3900	.....

Wayne Automobile Mfg and Eng. Co.
Trade Name, Wayne.

Model	Tons	Chas. Price	Com. Price
A	1	$1850	.....
B	2	$2900	.....
C	3½	$4100	.....
D	5	$5000	.....

Western Truck Mfg. Co., 122 N. Curtis St., Chicago, Ill.
Trade Name, Western.

Model	Tons	Chas. Price	Com. Price
..	7	$5700	.....

White Motor Co., St. Clair and 39th Sts., Cleveland, O.
Trade Name, White.

Model	Tons	Chas. Price	Com. Price
GBBE	¾	$2300	.....
TBC	1½-2	$3300	.....
TJ	3	$4100	.....
TG	5	$5000	.....

White-Hickory Wagon Mfg. Co., Atlanta, Ga.
Trade Name, White Hickory.

Model	Tons	Chas. Price	Com. Price
F	1	$2000	.....
H	1½	$2400	.....

Wichita Falls Motor Co., Wichita Falls, Tex.
Trade Name, Wichita.

Model	Tons	Chas. Price	Com. Price
L	1½	$2350	.....
M	2	$2750	.....
R	2½	$2950	.....
RX	2½	$3400	.....
O	3½	$3750	.....
S	6	$5400	.....

H. E. Wilcox Motor Co., 1030 Marshall St., Minneapolis, Minn.
Trade Name, Wilcox Trux.

Model	Tons	Chas. Price	Com. Price
A	1	$2100	.....
B	1½	$2775	.....
C	2½	$3250	.....
D	3½	$3950	.....
W	5	$5000	.....

J. C. Wilson Co., Warren Ave. and 15th St., Detroit, Mich.
Trade Name, Wilson.

Model	Tons	Chas. Price	Com. Price
..	1	$1750	.....
..	2	$2800	.....
..	3½	$3800	.....
..	5	$4600	.....

Winther Motor Truck Co., Winthrop Harbor, Ill.
Trade Name, Winther.

Model	Tons	Chas. Price	Com. Price
39	1½	$2100	.....
439	1½	$2100	.....
49	2	$3000	.....
459	2½	$3250	.....
69	3	$3800	.....
479	3½	$4900	.....
89	4	$4200	.....
109	5	$5000	.....
129	6	$5250	.....
149	7	$5500	.....

Myers Machine Co., 1002 Indiana Ave., Sheboygan, Wis.
Trade Name, Wisconsin.

Model	Tons	Chas. Price	Com. Price
B	1½	$1750	.....
C	2½	$2500	.....
E	5	$5000	.....

Witt-Will Co., Inc., 52 No. N. E., Washington, D. C.
Trade Name, Witt-Will.

Model	Tons	Chas. Price	Com. Price
WD2	2	$2850	.....

American Commercial Car Co., Gratiot Ave. and Detroit Ter. R. R., Detroit, Mich.
Trade Name, Wolverine.

Model	Tons	Chas. Price	Com. Price
C	1½	$2180	.....

SELBYVILLE AUTO CO.

The Selbyville Auto Co., to deal in motor trucks, passenger cars, etc., has been chartered with $10,000 capitalization by Edward V. Baker, James M. Tunnell and W. G. Williams, Selbyville, Del.

SIEGFRIED WITH AUTO BODY CO.

J. B. Siegfried has become general sales manager of the Auto Body Co., Lansing, Mich. He was formerly general manager of the King Motor Car Co., Detroit.

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TRUCKS IN CONSTRUCTION WORKS

THE use of motor trucks for removing material excavated in the construction of various enterprises is almost universal in San Francisco. Machines more than any other single factor made possible the completion of the Twin Peaks tunnel within the time specified in the contract.

The excavation for the first 1300 feet of tunnel and for an underground station 300 feet in length was made in open cuts with steam shovel. A few hundred feet from the east portal the cut was so deep that it was necessary to excavate in two stages. One shovel first dug to a depth of about 12 feet and discharged material into auto trucks on the bank above the excavation. Behind this a second steam shovel completed the cut to the required depth and any surplus was removed by trucks which followed the steam shovel through the cut.

Beyond this the excavation was in tunnel. The material was raised on an electric elevator in dump trucks. At the top of the elevator on the surface there was built an immense set of bunkers, elevated so that the trucks could be backed under the bins. The dump trucks that raised the material from the tunnel dumped into the hoppers, and from the hoppers the trucks were loaded by gravity. Four five-ton White dump trucks were used in excavation, and were worked 24 hours a day, as the men in the tunnel were employed in three eight-hour shifts. The material was hauled from the bunkers, near the east portal, to a point beyond the west portal, a distance of three miles, and used for filling. Each truck averaged from 23 to 24 loads every 24 hours. These bunkers are seen in illustration in the upper left corner of the group.

The method of excavating for the Laguna Hunda station is shown at the upper right corner of the group. The excavations for this station were done in open cut, the maximum depth being 70 feet. Steam shovels carried the cut to within 15 feet of rail grade. The waste material was hauled an average distance of one-third of a mile in motor trucks, and was used in filling in low portions of the valley in which the station is built.

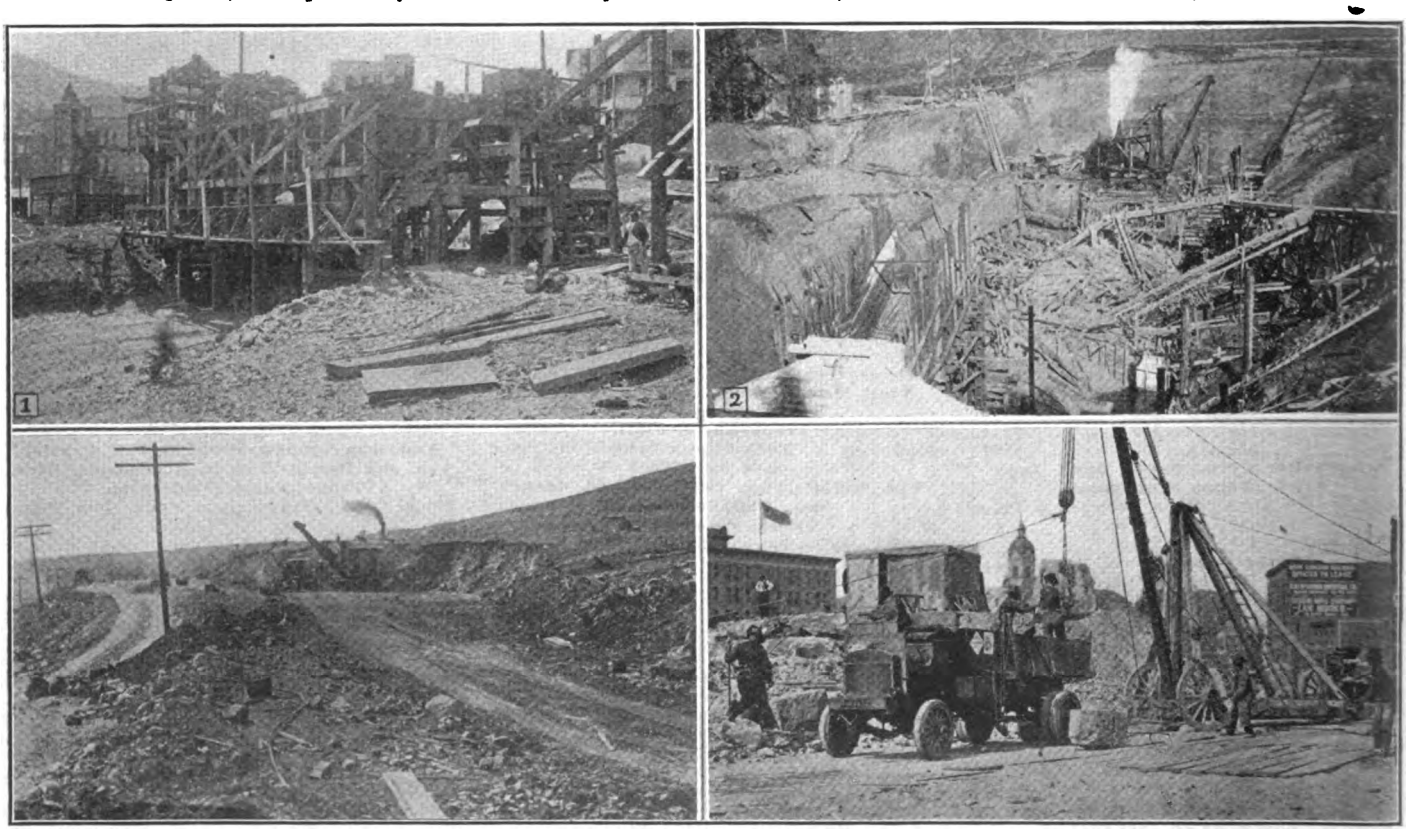
Approximately 150,000 cubic yards of sand and gravel was used in the construction of the tunnel, all of which was hauled by motor truck from sidings, one mile from the east portal and 1½ miles from the west portal. Special equipment was installed at the sidings for loading the material directly into the motor trucks. There were three sets of bunkers for receiving and storing the sand and gravel along the tunnel. Two were built under trestles. The motor trucks driving onto the trestles and dumping the material into the bunkers below. The third set of bunkers were arranged so that the material could be dumped directly from the trucks to the bunkers.

Building Street Railroad with Trucks.

Through the use of motor trucks and steam shovel, excavations were made for the municipal street car lines, which were recently completed in Market street. The excavations were completed in 22 days, on one of the busiest thoroughfares in the world, without seriously obstructing the traffic. From three to six five-ton trucks were used daily. A total of 45,000 yards of material was excavated in preparing the subgrade. A distance of about 600 feet was excavated daily. The concrete foundation of the pavement was broken up and hauled to the rock crusher, where it was crushed to ballast size and returned and dumped into the trench and used for ballast.

After the concrete was drilled and broken and loosened it was taken up with steam shovels that followed the line of the tracks and the trucks were loaded with but comparatively little manual work, hand shoveling being used only for "cleaning" the cut.

Heavy cuts into the hill side were necessary in constructing the municipal railway in Church street and practically all the excavating was done with steam shovels, the material being taken out of the cut by the shovels and loaded into the trucks, which were driven into the cutting and to the shovels. The only need was to keep the surface of the cut in such condition that the trucks could be driven to and from the shovels. Obviously this was a very great saving in labor and a decided economy of the time of the trucks, for the only standing time was while they were loading. The time for excavating a truck load ranged from two to four minutes, and as the loads



Heavy Construction Work with Trucks in San Francisco: Upper Left, All Material from the East Section of the Twin Peaks Tunnel Was Conveyed in Dump Cars, Elevated to the Surface at Eureka Street Dumped Into the Bunkers, Shown, and Loaded by Gravity Into Trucks for Removal. Upper Right, Open Cut at Eureka Street, the Material Being Relayed from Level to Level and Loaded Into Trucks by Steam Shovels—the Cutting Is 70 Feet Deep; Lower Left, the Hunter's Point Road, Looking Northwest, This Work Requiring 91,427 Cubic Yards Excavating and 101,867 Cubic Yards Filling; Lower Right, Clearing the Site for Civic Center Buildings, Material Being Removed with Steam Shovels and Heavy Rock Loaded with Power Derricks.

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were discharged by gravity from six to eight minutes covered the periods essential for loading and unloading in a round trip of a vehicle.

Moving Large Yardage of Material.

Power trucks are used almost exclusively in the haulage of material in constructing roads and streets. Some undertakings are of large proportions, this applying particularly to the Twin Peaks boulevard, for besides the tunnel and the deep cuttings much filling was necessary. The magnitude of this work may be the better understood when it is realized that some of the fills to establish the grade were 60 feet deep.

One of the most notable features of this boulevard is a curve forming a full semi-circle or horseshoe with a center line radius of 68 feet, and to insure against accidents to automobilists when driving around this curve more than 3000 cubic feet of rock were excavated with steam shovels and hauled with trucks, so that there could be a clear and unobstructed view across from one side of the curve to the other.

Economy in Road Construction.

A work of large magnitude was building the Hunter's Point road, which for a considerable distance is along the side of the mountains, this necessitating cutting on one side and filling on the other side of the roadway to make a level surface. The road is wide and the grades are long. In building this roadway 91,000 cubic yards of rock and earth were excavated and 101,800 cubic yards of filling, so that approximately 191,800 cubic yards were handled. The average load for a five-ton truck is from three to four yards, dependent upon the character of the material, so the magnitude may be better judged when statement is made that between 50,000 and 60,000 truck loads were handled.

The San Francisco board of public works utilizes a fleet of power trucks in highway repair work and these have been proven economical both of time and labor as compared with other forms of equipment. Clearing the site for the different buildings for the civic center and excavation for the foundations of these structures was done by the department with its own equipment, and this necessitated a great deal of heavy work.

In excavating the cutting was done with regard to the use of steam shovels and trucks, plank tracks being laid on the surfaces, so that there would be no need for loss of time because of heavy traction, and on these both the shovels and the trucks could be moved at low operating cost and large economy of time. The special derricks were erected for loading heavy rock on the trucks and the steam shovels handled the remainder of the material. Besides all of this work the trucks hauled practically all of the construction material, the cement, sand, stone, structural steel, lumber and wood finish. Some work was done with outside trucks, but most of it was accomplished by the machines owned and operated by the city.

Nat Udell, who has been at the Indianapolis branch of the Ford factory, is now in charge of the Ford branch in Seattle.

Highway Officials of States Confer With Houston

Secretary of Agriculture David F. Houston, addressing representatives of the highway departments of 27 eastern, southern and middle western states, declared that his department desired to give every possible help in expediting resumption and progress of highway building under the Federal Aid Act.

Representatives from states not represented at this meeting are to confer with Secretary Houston in the near future.

Secretary Houston said that the Postoffice Appropriation Bill, carrying $209,000,000 additional funds for highway construction under the Federal Aid Road Act, had been signed by President Wilson, thus becoming law.

A canvass of the representatives in attendance indicated that if conditions are favorable there will be spent for road building during the next 18 months approximately a half billion dollars, from Federal, state and local funds.

This work, it is estimated, would employ 100,000 men in active road work, in addition to the men engaged in the production and furnishing of road building materials.

Existing freight rates are a serious impediment to the immediate resumption of road building, the state highway department delegates told Secretary Houston. Accompanied by Clarence Ousley, assistant secretary of agriculture, they presented the situation to officials of the railroad administration. They received a sympathetic hearing and were promised that the matter would be taken under advisement.

Among the states represented were Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

The Secretary of Agriculture announced at the conference that resumption of highway work has the active interest of President Wilson, who had urged immediate consideration of the problem in a radiogram sent while the President was returning to this country from Paris.

Would Return Army Engineers.

Secretary Houston promised to take up with the War Department the request of the state highway officials that engineer regiments, now in France and containing a large number of highway engineers, should be returned to this country and be demobilized.

The secretary said that highway work is desirable this spring and summer not only for the sake of the improved roads themselves, but for the employment such work will furnish to men discharged from the army and from war industries. After hearing reports of the status of road work in various states, and the sentiment among the people for better roads, he said that the situation is highly encouraging and the state highway departments can count on every help that the department can give in using the money available for Federal aid road work. He declared his belief that highway work should be resumed immediately notwithstanding present costs of materials and labor, and that such a procedure would be the cheapest thing in the end for the country at large.

Tell of Progress in States.

Among the state officials who reported on conditions were Col. W. D. Uhler of Pennsylvania, who said that Governor Sproul "has ordered the road campaign this year pushed to the limit;" Frank F. Rogers of Michigan, who said his state is preparing to start an intensive road campaign as soon as the weather permits; T. H. McDonald of Iowa, who said a sentiment is sweeping over the Middle West for high grade roads in preference to cheaper construction; Edwin A. Duffey of New York, who said that one of the greatest problems before road builders is the carriage of heavy trucks and that limits should be placed upon the loads allowed to traverse improved highways.

W. M. Williams, solicitor of the Department of Agriculture, explained various provisions of the amendment to the Federal Aid Road Act, as contained in the postoffice appropriation act, and said that the most liberal interpretation possible will be placed upon the law by his office in order that road building may be expedited.

STUDEBAKER LEASES SERVICE STATION.

The Studebaker Corporation of America has leased for its service station for a term of 21 years the new fireproof steel and concrete building at 217-223 West 77th street, New York City. The building, which has been under construction for nearly two years, has just been completed by the Jay estate, owner of the property. It has six full floors and represents the latest improvements in service building construction and equipment. It is unusual in that it has light on all four sides. The Studebaker Corporation has subleased the large building recently constructed for its service station and assembling rooms at Anable Avenue, Long Island City, N. Y.

DETROIT ORDINANCE REGULATING TRAILERS.

An ordinance regulating the use of motor trailers in the city streets has been approved by the Common Council of Detroit. Only one trailer may be hauled, rubber tired wheels must be used, the load must not exceed 800 pounds per inch of tire width per wheel, and the trailer, including load, must not exceed 50 feet length.

PARIS EXPERT WITH FULLER & SONS.

John B. Giovanoli, automobile expert from Paris, France, is now supervisor of tools for Fuller & Sons Manufacturing Co., Kalamazoo, Mich.

Capt. Charles Smith of the Engineers' Corps, U. S. A., who is connected with the Commerce Motor Car Co., has returned from overseas.

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PARTIAL LIST OF NEW ENGLAND INDUSTRIES

Agricultural Implement Manufacturers	57	Ice Cream Manufacturers	250
Agricultural Implement Dealers	227	Ice Dealers	1,024
Artesian Well Borers	108	Iron Works	229
Awning Manufacturers	93	Iron and Steel Dealers	140
Bakers	2,284	Junk Dealers	927
Bakers' Supplies	36	Leather Manufacturers	126
Barrel Dealers	161	Laundries	1,395
Belting Manufacturers	72	Leather Dealers	453
Bill Posters	143	Lumber Dealers	1,709
Bottle Manufacturers	5	Lumber Manufacturers	246
Bottle Dealers	45	Machinists	781
Bottlers	752	Machinery Dealers and Manufacturers	923
Bottlers' Machinery and Supplies	13	Marble Workers	353
Box Lumber Manufacturers	37	Masons	2,703
Box Manufacturers	464	Mattress Manufacturers	97
Brewers	69	Milk Dealers	3,336
Brick Manufacturers	206	Mill Supplies	181
Broom and Brush Manufacturers	152	Milk Producers	995
Builders' Material	201	Nurseries	202
Butter, Cheese and Eggs	785	Oils and Lubricants	630
Carpenters and Builders	7,285	Paints, Oils, Etc	431
Carpet Cleaners	117	Paper Manufacturers	254
Caterers	177	Paper Box Manufacturers	204
Chemists, Manufacturing	151	Paper Dealers	221
Canned Goods, Manufacturers	182	Plumbers' Supplies	123
Cleansers	226	Plumbers	3,397
Coal Dealers	2,314	Poultry Growers	1,097
Commission Merchants	197	Produce	812
Concrete Construction	94	Provisions	4,436
Confectioners, Wholesale	101	Roofers	444
Confectioners, Manufacturing	222	Rubber Goods	264
Contractors and Builders	1,425	Sash, Doors and Blinds	172
Creameries	314	Screen Manufacturers	97
Department Stores	118	Saw Mills, Etc	1,446
Dry Goods	3,481	Sheet Metal Workers	323
Dyers	289	Shoe Manufacturers	860
Dry Goods, Wholesale	119	Show Manufactnrers' Goods	377
Electric Lighting Companies	534	Soap Manufacturers	138
Electrical Contractors	1,141	Starch Manufacturers	62
Electrical Supplies	486	Stone Cutters	164
Engines	240	Storage	208
Fish Dealers	1,669	Tanners	77
Florists	1,512	Teamsters, Expresses, Etc	3,122
Foundries	425	Teas and Coffee	624
Flour and Feed	1,019	Stoves, Ranges, Etc	551
Fruits	1,883	Tool Manufacturers	226
Furniture Dealers	1,876	Trunk Manufacturers	69
Furniture Manufacturers	131	Undertakers	1,077
Gas Companies	203	Vinegar Manufacturers	668
Granite Dealers	979	Water Supply Companies	131
General Stores	3,698	Wool Dealers	260
Wholesale Groceries	242	Wood Dealers	875
Groceries, Retail	18,269	Manufacturing Companies	2,902
Grist Mills	720	Plumbers, Steam and Gas Fitters	3,287
Hardware Manufacturers	129	Telephone and Telegraph Companies	993
Hardware, Retailers	1,629	Textile Manufacturers	1,022
Hay and Grain	528		
House Furnishings	255	Total	100,967

Population and Commercial Centers of New England

States	1000 to 5000	5000 to 10,000	10,000 to 25,000	25,000 to 50,000	50,000 to 100,000	100,000 to 200,000	200,000 to 300,000
Maine	37	13	5	2	1	0	0
New Hampshire	17	7	6	1	1	0	0
Vermont	34	10	3	0	0	0	0
Massachusetts	64	57	33	14	5	6	0
Rhode Island	20	7	5	4	1	0	1
Connecticut	44	24	7	5	1	3	0
Total	216	118	59	26	9	9	1

AUTOMOBILE INDUSTRY AND TRADE OF NEW ENGLAND.

State	Manufacturer	Dealer	Garage	Repair	Accessories
Connecticut	7	419	468	277	240
Maine	1	346	312	135	144
Massachusetts	17	772	955	419	390
New Hampshire	1	177	216	103	100
Rhode Island	1	95	140	91	38
Vermont	0	168	161	87	102
	27	1977	2252	1112	1014
Total					6382

TIRE PRICES TO HOLD.

Not anticipating any great advance in crude rubber, Samuel P. Colt, chairman of the United States Rubber Co., announces that he expects freights to remain about at the present level. Pending reduction in cotton prices and commodities entering into tire construction, tire prices will probably hold.

The Liberty Motor Service Association, Philadelphia, has increased its capital from $25,000 to $100,000.

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BOSTON TRUCK DEALERS DIRECTORY

Trade Name	Dealer or Branch	Address
Acme	George T. Gould	95 Journal Building.
Autocar	Autocar Sales and Service Co	642 Beacon St.
Atterbury	Connell & McKone Co	109 Brookline Ave.
Atlas	Eastern Motor Sales Co	823 Boylston St.
Atlantic	Day Baker Motor Truck Co	39 Ferdinand St.
Acason	Merchants Motor Corp	584 Commonwealth Ave.
Bethlehem	Connell & McKone Co	109 Boylston St.
Buick	Noyes-Buick Co	17 Lawton St.
Brockway	South Bay Garage	409 Dorchester Ave., South Boston.
Babcock (Bodies)	Babcock Sales Co	1123 Commonwealth Ave.
Concord	Abbott-Downing M. T. Body Co	171 Huntington Ave.
Columbia	John L. Judd	685 Beacon St.
**Dearborn	John L. Judd	685 Beacon St.
Cunningham (Hearses)	James Cunningham Sons Co	1117 Commonwealth Ave.
Clydesdale	Signal Motor Truck Co	949 Commonwealth Ave.
*Lawton	Hudford Co	148 Berkeley St.
Diamond T	Eastern Motor Sales Co	823 Boylston St.
Denby	Woodbridge Co	92 Massachusetts Ave.
Four Wheel Drive	G. W. McBride & Co	6 Columbus Ave.
Duplex	R. W. Linscott Co	33 Brookline Ave.
Federal	Boston Federal Truck Co	233 Massachusetts Ave., Cambridge.
Dodge	Henshaw Motor Co	1079 Commonwealth Ave.
Indiana	Indiana Truck Co	182 Massachusetts Ave., Cambridge.
G. M. C	Noyes-Buick Co	17 Lawton St.
**Guaranty	Guaranty Motor Co	868 Main St., Cambridge.
Garford	Garford Motor Truck Co	900 Commonwealth Ave.
Gramm-Bernstein	John L. Judd	685 Beacon St.
*Hudford	Hudford Truck Co	148 Berkeley St.
Hurlburt	F. E. Wing Motor Car Co	1249 Boylston St.
Service	W. L. Russell Co	218 Eliot St.
International Harvester	International Harvester Co	43 Somerville Ave., Somerville.
Hall	Hall Motor Truck Co	1123 Commonwealth Ave.
Kelly-Springfield	Kelly-Springfield Motor Truck Co	596 Commonwealth Ave.
Kissel	W. H. Schwartz, Dist. Sales Manager.	Copley Plaza Hotel.
Maccar	C. S. Ransom, Inc	704 Beacon St.
Fulton	C. S. Ransom, Inc	704 Beacon St.
*Truxton	C. S. Ransom, Inc	704 Beacon St.
Mack	Mack Motor Truck Co	185 Massachusetts Ave., Cambridge.
Maxwell	C. E. Fay-Allen Co	620 Commonwealth Ave.
Nash	C. P. Rockwell, Inc	640 Commonwealth Ave.
*Maxfer	Eastern Motor Sales Co	823 Boylston St.
Menominee	A. E. Kenney	25 Haverhill St.
Northway	Jos. E. Cavanagh	148 State St.
Overland	Connell & McKone	109 Brookline Ave.
Packard	Packard Motor Truck Co	1089 Commonwealth Ave.
Peerless	Beacon Motor Car Co	660 Beacon St.
Pierce-Arrow	J. W. Maguire Co	745 Boylston St.
*Phenix	G. W. McBride Co	6 Columbus Ave.
Reo	Linscott Motor Co	566 Commonwealth Ave.
Rush	Rush Motor Co	159 Massachusetts Ave.
*Redden	Boston Sales Co	82 Massachusetts Ave., Cambridge.
Riker	Locomobile Co. of America	700 Commonwealth Ave.
Republic	Republic Motor Truck Co. of Boston.	33 Brookline Ave.
Rainier	New England Velie Co	80 Brookline Ave.
Paige	Paige-Detroit of N. E	332 Commonwealth Ave.
Sanford	C. S. Ranscom, Inc	704 Beacon St.
Sterling	F. O. Johnson	141 Milk St.
*Smith Form-a-Truck	John L. Judd	683 Beacon St.
Sullivan	Mitchell-Lucas Co	Copley Square.
Selden	Baker Motor Sales Co	400 Massachusetts Ave., Cambridge.
Stewart	Proctor Fisher, Inc	595 Newbury St.
Signal	Signal Motor Truck Co	949 Commonwealth Ave.
Velie	New England Velie Co	80 Brookline Ave.
Vim	Dunbar, Sanders, Bowen, Inc	655 Beacon St.
Triangle	Triangle Motor Truck Sales Co	94 Massachusetts Ave.
White	White Co	930 Commonwealth Ave.
Ward Electric	E. V. Stimpson	530 Commonwealth Ave.
Winther	J. W. Emery	72 Brookline Ave.
Walker Electric	Walker Vehicle Co	592 Commonwealth Ave.
*Will-Holl	Will-Holl Co	388 Newbury St.
Walker	Walker Truck Co	163 Massachusetts Ave.

*Chassis conversion units.
**Complete trucks and chassis conversion units.

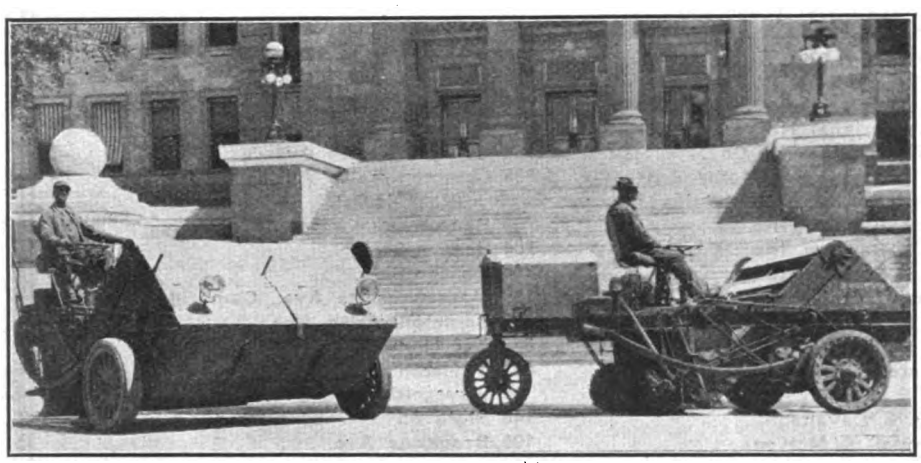
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POWER STREET SWEEPER ECONOMIES.

By Frank C. Perkins.

The accompanying illustration shows a novel gasoline engine driven street cleaning machine that sprinkles, sweeps and collects the refuse and is operated entirely by one man. It sweeps a path eight feet wide and travels at a working speed of from four to six miles per hour. The speed of four miles is used where the street is rough, the work heavy or traffic congested—in business districts—and six miles where the pavement is smooth, the work is comparatively light and where the street is unobstructed as in the residential districts.

It is claimed that this machine has a maximum capacity of 48 miles of pavement eight feet wide in eight hours. This is equivalent to a maximum capacity of 225,280 square yards of pavement. The operating cost of doing this work is made up of the wages of an operator and the cost of eight gallons of gasoline, two quarts of oil and broom wear, which runs about $2 per day.



Power Street Sweepers Used at Boise City, Ida., That Replace Three Animal Outfits and Gangs of Men for Operating and Removing the Sweepings.

Cities using these machines that have annual reports of their street cleaning departments, show that machine work costs from 12½ to 14 cents per 1000 square yards. These figures take into account the wages of a driver, gasoline, oil, brooms, repairs, supplies, clerical labor, cost of machine, interest on investment and incidental manual labor.

It is pointed out that water used to suppress dust as ordinarily "sprinkled" is destructive to pavements, so this machine uses a minimum volume—180 gallons—just enough to prevent the dust rising. It is distributed on the street so scientifically and equally that while the dust is settled perfectly, there is no free water on the street after the machine has passed over; neither is there mud, no matter how dusty the street may be. The sweepings are instantly collected. They are not placed in the gutters to remain indefinitely. By collecting with the machine the sweepings are not washed into sewers, filling the catch basins, and thus causing additional expense, for these must be cleaned by the sewer department.

The street department pays practically all the expense of cleaning the paving. The collection of sweepings not only makes for economy, but for health, as there can be no refuse in the gutters and no piles every few feet along the curb that are removed at convenience. The machine requires a minimum of water and covers an eight foot sweep instead of the seven feet of an animal drawn machine, while the expense of removal is eliminated. Thus three machines are combined in one.

It substitutes a 45 horsepower engine for horses, and one man does all the work instead of the usual "gang." It does its work for one-third the cost of the animal equipment, and it saves the pavements of flushing, which is more or less destructive. The main element is a rotating broom of large diameter, that can be pressed against the pavement.

The sweeper is carried on three wheels, it can turn around in almost its own space and the steering is done by the single wheel in the rear. The broom and elevator have two speeds, independent of the speed of the machine; fast for very dirty streets, slow where better conditions prevail. When new the broom has a diameter of 34 inches; when worn until no longer serviceable, 21 inches. A broom of large diameter gives the best sweep. The water is spread on the pavement so there is no flow on the street after the machine has passed over it. The distribution can be fully regulated as the water is forced through by compressed air, and the volume may be varied by turning a hand wheel beside the driver's seat. The water tank can be filled once or twice an hour by attaching hose to any hydrant. The hopper which holds the sweepings has a capacity of nearly three cubic yards, about an hour's run under average conditions, and it is easily and very quickly dumped by a throwing lever at driver's feet.

It is stated that any broom fiber may be used in refilling the brooms, which are made of split bamboo, wound on a grooved core, which can be easily renewed. It may be mentioned that 100 pounds of fiber 24 inches long are needed to make a first class broom and by using the broom filling rack two men can fill three brooms in one day. A broom lasts from seven to 15 eight-hour days according to character of work.

The daily operating cost is composed of the wage of one driver, eight gallons of gasoline, two quarts of oil and broom wear, which runs from $1.50 to $3 according to the market price, quality and kind of fiber used.

The City of Boise, Ida., running two machines, reports a cost of $0.1127 per 1000 square yards cleaned, such cost including gasoline, oil, broom fiber, supplies, repairs, disposal of sweepings, depreciation, interest on investment, supervision, salaries of drivers and hand broom sweepers, as against a previous cost of 33 cents per 1000 square yards.

The engine used is a four-cylinder heavy duty type with bore of 4½ inches and stroke of 5½ inches, rated at 45 horsepower at 1500 revolutions per minute. The transmission consists of a 50 horsepower clutch, a sliding gear, selective type transmission gearset, three-bearing forward speed ratios and reverse, with a differential gearset and broom and conveyor shaft gears enclosed in same case that run in an oil bath. The dirt conveyor consists of a high grade vanner belt the full width of broom, with steel angles riveted to surface. The conveyor is enclosed in a casing with steel bottom and sides and white pine top. The whole conveyor and casing is supported by heavy coil springs with stop chains to limit its drop. The conveyor bearings are of interest. The conveyor is carried on top and bottom rolls with long bearings on the outside of the casing. The top roll is adjustable for tension on the conveyor belt and the bearings are lubricated from the outside. The dirt carrier is eight feet by three feet, with ends of ¼-inch steel plates and sides of two-inch fir tank stock. The water tank is eight feet long by 24 inches diameter and is tested for 100 pounds working pressure.

BETHLEHEM STILL MAKING TRUCKS FOR GOVERNMENT.

Arthur T. Murray, president of the Bethlehem Motors Corporation, Allentown, Pa., has gathered facts from many sources regarding motor trucks owned by the government for war purposes. The trucks of all sizes delivered overseas totaled 42,310. The total number of all types delivered and still in this country, plus delivery now authorized on outstanding contracts, will approximate 52,000. The Bethlehem firm is now completing a large order for Class B trucks for the government and is preparing to make a larger number of trucks this year.

The Yankee Motor Trucking Corporation, 1789 Broadway, New York City, has been chartered under the laws of New York state by D. Wagman, D. D. Deutsch and J. L. Diamond.

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COOPERATIVE TRUCK CONTRACTING.

Speedwell Motor Service Co., Philadelphia, Sells Machines, Operates General Garage and Manages Business for Drivers Who Own the Trucks in Use.

By K. Herrick.

WITH a fleet of power trucks consisting of 10 Atterbury, four Hall and two Speedwell machines, the Speedwell Motor Service Co., Inc., Philadelphia, operates a very prosperous contract haulage business, the activities of which are generally in the Quaker City and its suburbs. The work is generally miscellaneous and in some instances is unusual, but it all comes under the classification of transportation.

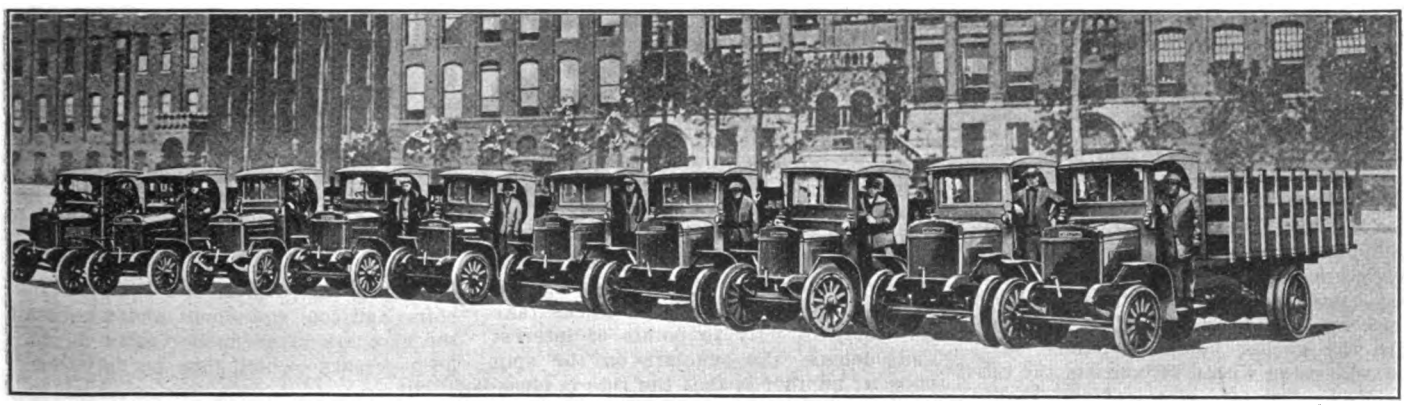
While the company has this fleet of trucks regularly in its service, as a matter of fact it owns but the two Speedwell machines. All of the other trucks are owned by the drivers, so that the concern may be considered cooperative, the work is obtained by and supercontract for haulage the service of the company is far better than having lists of individual owners of trucks who might be available, seeking them when transportation is desired, and depending upon those not well known to them for work that may be extremely important. The truck drivers of the Speedwell company work together for the common good and each shares in the business that is developed. There are times when the fleet is added to for a special work, when there is need of more units than it ordinarily controls, and then men who are reliable and whose service will be up to the standard are temporarily engaged.

William P. Vees is president and Frederick W. Vees secretary and treasurer of trucks and sells the owners gas and oil. This again shows the benefit of cooperation, which is novel, at least for Pennsylvania, although there are many concerns doing contract haulage brokerage.

Storage is charged at the rate of $15 a month and, of course, it is "live" storage. Oil costs the truck owners 60 cents a gallon at the present time and gasoline 27 cents. The company's office and garage is well located for business—it faces 1335 Frankford avenue, is at a corner and the building extends through to the next street in the rear, Crease street, giving access and egress from both front and back. A general storage business is done to reduce overhead expense. At the present writing 28 cars, in addition to those used by the company, or 45 in all, are stored nightly here.

Operates Fleet of 16 Trucks.

The company's fleet units are as follows: Nine Atterbury trucks of 3½ tons capacity each, one two-ton Atterbury, four Hall trucks of five tons capacity and two six-ton Speedwell trucks. All these machines have express bodies. Notwithstanding that the bulk of the company's



The Atterbury Trucks Operated by the Speedwell Motor Service Co., Philadelphia, Nine 3½-Ton and One Two-Ton, Operated Practically on a Cooperative Basis in General Contract Haulage, Much of the Work Being Local.

intended by the Speedwell company, so that there is uniformity of service, an established responsibility and reliability that has attracted practically all of its business.

The fact that the drivers are truck owners and have a direct interest in the company and its service is looked upon as being as strong a guarantee as could be presented. The drivers are responsible to themselves for their trucks because upon their condition depends the return they receive upon investment of both capital and labor, and the earnings are practically in ratio to their endeavors.

The Speedwell company is the operator or manager, for it makes all contracts for work, establishes the prices, makes the collections and adjustments, pays all the expenses and receives 10 per cent. of the net earnings of each truck as its share of commission. Controlling a fleet of machines that it can operate as its own the company can undertake work of large volume or magnitude.

Cooperative Service Is Dependable.

From the viewpoint of those who make the Speedwell company. The former before engaging in contract hauling, operated a motor truck agency. When he decided to change from selling trucks to operating them, for he reasoned that as he had sold power trucks to a number of careful, competent men who were either expert drivers themselves, or would engage only first class drivers to work for them, it would be better to establish himself by relying on these men and their equipment as a nucleus for a service fleet and perhaps increase this from time to time by adding his own vehicles. Naturally this plan meant cooperation in a broad sense, the administration being in his hands.

He sold trucks, the buyers paying 25 per cent. cash and giving 12 notes of equal amounts, one due on the first of each month. These buyers who made contract with his company were given work, this being impartially allotted to them. They were credited with the work they actually did with their trucks. The company, which has a large garage and repair shop, together with its office, as now operated charges storage for these business is hauling for building operations, it has not been found necessary to provide winches, body hoists or dump bodies.

As the company is not engaged in inter-city hauling on regular schedule, it has not been necessary either to equip any of the trucks with van bodies. In fact, because of the nature of the business, and much of the loading and unloading is done with cranes, it would not be practical to use vans. The express bodies, however, are built so that bows can be used when necessary to support tarpaulin canopies and sides. There are no runs to outside cities except on order.

Most of the hauling work is by contract and a big business is done in moving stone, lumber and terra cotta. Case goods are hauled from railroad terminals and piers to destination, usually warehouses; structural steel, asbestos, machinery, leather and miscellaneous loads are the usual freights hauled.

The Speedwell company's quarters is close to Cramps' ship yard and adjoins the Kensington textile mill district and the concern draws considerable business

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The Kind of Service That Earns Business: Speedwell Six-Ton Truck with Load of Machinery Climbing the Mountains Near Bethlehem—a Hurry Work.

from these sources, in the former instance the loads usually consisting of propellers and heavy anchor chains—these being in sections, four loads to one chain, as they are extremely heavy, each link being 3½ inches wide.

In moving textiles one class of work is transporting raw materials from railroad terminals, shipped from Macon, Ga., and vicinity, conveying them from the car sides to the Kensington mills. Hauling also is done for the Ohio Match Co. and R. A. Humphrys Sons, awning makers.

Quick Trips with "Kosher" Meats.

One of the most novel and interesting transportation problems is hauling kosher meat for D. B. Martin Co. and the Consolidated Dressed Beef Co. from Philadelphia to New York City's down town Jewish markets. There is always breathless haste about this work, as the meat must actually be delivered in 12 hours into the kosher butchers' hands, as it must be eaten within 24 hours of the killing to be "strictly kosher." Atterburys always are used in this "sure footed" run.

While the company's running time between Philadelphia and New York is 10 hours, it takes some nervous suspense and no little hurry to make actual delivery in the markets in New York within the prescribed 12-hour period. It would not do to have meat turn from "kosher" to "trefa" because of delay on the road.

The company's trucks also have helped to move part of Delaware county into Philadelphia county, or Philadelphia city, both being identical in boundaries. That was when the trucks were engaged in hauling sod from Delaware county to New Cathedral cemetery, a distance of 20 miles.

When the Edward G. Budd Manufacturing Co. of Philadelphia, maker of steel automobile bodies, moved from its old quarters on Ontario street to its present factory at 25th street and Hunting Park avenue, the Speedwell company's trucks picked up the machinery at the first mentioned address and conveyed it quickly and accurately on to the spot of assembly. That was a five-mile jaunt.

A year ago last fall, when many lives were lost in the big explosion of a munition plant at Eddystone, the Speedwell company was asked to rush coffins to the scene of the disaster. On short notice it was able to do so, using two trucks in the run and placing 24 coffins on a 3½-ton Atterbury truck.

Specializes Outing Transportation.

The most novel use of all made of the company's trucks is in the summer time, when a business is made in the slack periods of transporting school picnic and outing parties. As many as 400 scholars have been carried in the 3½-ton Atterbury trucks in one day—there being 60 to a truck. Valley Forge is a favorite outing spot for the school children. Three long, specially made benches are placed in each truck for these occasions—one extending down each side and one through the middle. The public schools prefer to have the children ride in the trucks to going by railroad for several reasons, one being that the trucks take the party directly to points of interest and debark the scholars on the spot chosen; another is that the ride is pleasanter, and still another is that it is cheaper. A charge of $25 a truck for the return trip is made in the case of nearby points and it has proved a profitable way of turning wheels when regular hauling is at a minimum, or some of the trucks might otherwise be idle for a part of the time at least.

Seven trucks have been filled at a time with school children, covering a 50-mile trip. Sunday school picnics have been transported and children's parade floats have been provided by the Speedwell Co., the picnickers often choosing Fairmount Park as an objective point, with Wissahickon and Chalfont as alternatives. Of especial interest to the motor car trade is the fact that the company in the baseball season carries the team of the Edward G. Budd Manufacturing Co. to whatever out of town point it plays.

The Hess-Bright Manufacturing Co., maker of ball bearings, sends its picnic and outing parties to and from the destinations in the Speedwell company's trucks. This goes to show how opportunity awaits the man or company operating trucks if he or it is alert for business.

As to the zone of the company's operations, it is limited only by orders. While, as previously mentioned, there is no daily long distance schedule of hauling, no regular daily inter-city service, the company's trucks take merchandise or raw materials quite as far as the companies which specialize long distance trucking. Familiarity with the practical garage and repair ends of the business helps the company keep operating expenses down to a minimum. Hauls frequently are made to Aberdeen, Jersey City, places in Connecticut and other New England states; Baltimore, Reading, Harrisburg, Elizabethtown and, of course, Camden, across the Delaware river by ferry.

Runs have been made to Brooklyn and return on but 47 gallons of gasoline. The drivers usually plan on going 40 miles in a 10-hour day. The company deems night the best time for road driving, when it is convenient, as there is less likelihood of accident, the motor is cooler and, quite important, the carburetor vaporizes the gasoline better, producing a superior mixture and making the truck operation "sweeter."

In all of last winter's hard storms and deep snow the company's Atterburys never missed a day, nor were long delayed on the road. A point made by the company is to instruct that non-skid chains shall not be used on chain drive cars, as it is claimed the chains "interfere," although such chains are favored for winter driving on worm drive units.

Anchor chains are carried for safety in winter, with half-inch links. Only the driver mans a truck when out-of-town trips are made, except in the case of unusually heavy loads, when a helper is added.

Two experts are employed in the repair shop, where there is a complete machine and tool equipment and where all the cars are given such repairs as may be necessary—which thus far have been slight.

Prices for Special Work.

Considerable hauling for the government was done during the last summer and fall and it is interesting to note some of the contract prices, as follows:

One five-ton trip from Philadelphia to Brooklyn, Long Island City and Port Jefferson, L. I., for $100 the trip.

Thirty five-ton trips from Philadelphia to Jersey City for $100 the trip.

Forty five-ton trips from Philadelphia to Aberdeen, Md., for $80 the trip.

These trips were made on 24 hours' notice. The armistice prevented about 50 per cent. of the entire work specified in the contracts from being completed.

Reviewing the company's arrangement with the owner drivers, settlement is made for the previous month by the 10th of each month. The company's bookkeeper gives each owner a report, showing business done and expenses, including the company's commission. The owners keep their own individual accounts for comparison. No receipts are given, payment being made by check. There is a daily truck report to be filled in by each chauffeur. Each driver, on coming in at night, gets his report form from the bookkeeper's stack of forms and fills in the proper entries.

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Some Examples of Truck Earnings.

From these blanks the bookkeeper makes out the charges for the book and the simplest form of bookkeeping is employed. The monthly report for each truck is self-explanatory. It is presented the first of every month.

Here is a sample of one truck owner's account for September:

EXPENSES.

Storage, four weeks	$86.00
Driver's wages, one day	4.50
Driver's wages, five hours	2.50
New bracket and bolts	4.50
Repairing spring	5.00
Storage	15.00
Gas and oil	18.54
Commission	27.98
Business	$279.88
Expenses	164.02
Balance	$115.86

Here is the approximate cost of operation per day of a two-ton and of a 3½-ton Atterbury, based on 50 miles a day, 300 days to the year:

	Per Day	
Driver—	2-Ton	3½-ton
Fuel—Based on 23c a gallon	$3.00	$3.00
2-ton, one gallon to seven miles; 3½-ton, one gallon to six miles	1.64	1.92
Oil—Based on 28c a gallon. 2-ton, one gallon to 125 miles; 3½-ton, one gallon to 100 miles	.115	.14
Repairs and Overhauling. 2-ton averages $.035 a mile; 3½-ton averages $.04 a mile	1.75	2.00
Tires—Based on manufacturer's guarantee of 7000 miles. 2-ton estimated cost per set, $209.85; 3½-ton estimated cost per set, $284.94	1.49	2.04
Insurance, liability, property, collision and fire and theft. Depends upon local conditions, rates of insuring, etc.		
Cost per truck	.74	.82
Based on $15 a month, 300 days per year	.60	.60
Amortization at 10% a year. Investment to include standard body design, but less average cost of tires. 2-ton, $2586.72; 3½-ton, $3366.06	.86	1.12
Interest—6% per annum on investment, which amortizes at rate of 10% per annum	.28	.37
Total	$10.47	$12.01

Annual Earnings with 3½-Ton Truck.

Here is a year's account for a truck owner working with the Speedwell company:

LEO MAYNES. 3½-TON ATTERBURY.
January, 1918.

Expenses—	
Storage, gasoline and oil	$47.63
License and notary	25.50
Commission	57.83
Total	$130.96
Business	$578.39
Expenses	130.96
Due Maynes	$447.43

February.

Expenses—	
Storage, gasoline and oil	$57.85
Cash and wages	63.00
Commission	54.93
Total	$175.78
Business	$549.39
Expenses	175.78
Due Maynes	$373.61

March.

Expenses—	
Cash	$80.00
Storage, gasoline and oil	40.50
Commission	49.07
Total	$619.57
Business	$490.75
Expenses	$169.57
Due Maynes	$321.18

April.

Expenses—	
Cash	$90.00
Insurance	95.63
Storage, gasoline and oil	44.50
Commission	52.00
Total	$282.13
Business	$520.00
Expenses	282.13
Due Maynes	$237.87

May.

Expenses—	
Cash	$100.00
Insurance	47.12
Gasoline, oil and storage	38.95
Commission	52.50
Total	$238.57
Business	$525.00
Expenses	238.57
Due Maynes	$286.43

June.

Expenses—	
Cash	$80.00
Insurance	47.12
Storage, gasoline and oil	45.36
Commission	45.07
Total	$217.55
Business	$458.25
Expenses	217.55
Due Maynes	$240.70

July.

Expenses—	
Cash	$80.00
Repairs	7.75
Storage, gasoline and oil	43.08
Tires	367.03
Insurance	56.68
Commission	41.16
Total	$595.70
Expenses	$595.70
Business	411.64
Due Speedwell	$184.06

August.

Expenses—	
Cash	$108.00
Repairs	3.25
Storage, gasoline and oil	40.20
Commission	43.42
Total	$194.87
Business	$434.22
Expenses	194.87
Due Maynes	$239.35

September.

Expenses—	
Cash	$92.00
Repairs	9.50
Storage, gasoline and oil	33.54
Commission	27.98
Total	$164.02
Business	$279.88
Expenses	164.02
Due Maynes	$115.86

October.

Expenses—	
Cash	$93.90
Repairs	17.85
Storage, gasoline and oil	48.44
Commission	52.42
Total	$212.61
Business	$528.28
Expenses	212.61
Due Maynes	$315.67

November.

Expenses—	
Cash	$113.55
Repairs to rod	19.50
Storage, gasoline and oil	43.26
Commission	45.20
Total	$221.51
Business	$451.99
Expenses	221.51
Due Maynes	$230.48

December.

Expenses—	
Cash	$110.02
Repairs to parts	43.82
License	25.00
Storage, gasoline and oil	34.85
Commission	28.72
Total	$242.41
Business	$287.25
Expenses	242.41
Due Maynes	$44.84



Much of the Work Done Is Hauling Freight from the Railroad Terminals to Warehouses, Where Large Capacity Trucks and Big Crews Mean Quick Handling.

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This summary shows the following totals for the year:

Business	Expenses	Due Maynes
$578.39	$130.96	$474.43
549.39	175.78	373.61
490.75	169.57	321.18
520.00	282.13	237.87
525.00	288.57	286.43
458.25	217.55	240.70
411.64	595.70	*.....
434.22	194.87	239.35
279.88	164.02	115.86
528.28	212.61	315.67
451.99	221.51	230.48
287.25	242.41	44.84
$5515.04	$2845.68	$2853.42

One will note from the monthly summaries that advances of cash of $1010.57

SPEEDWELL MOTOR SERVICE CO.
DAILY TRUCK REPORT

Date
Truck No.
Driver

GAS	OIL	GREASE	Total Mileage
			Trip Mileage
			Per Mileage

START A. M.	STOP A. M.	START P. M.	STOP P. M.	WORK DONE FOR	
					1
					2
					3
					4

TRIPS

	1
	2
	3
	4

CONDITION OF TRUCK REPORT.

EXPENSE REPORT.

NOTICE—In case of accident report name of the party and also their number. Where it happened, on the other side of the card. THIS IS IMPORTANT.

The Daily Report Made by the Drivers to the Speedwell Motor Service Co., This Covering the Essential Operating Detail.

were made to Maynes, so that deducting this from the total expense the cost of the truck as represented by the figures shown was $1842.85. Assuming 300 working days this was an expense of $6.14 a day. Out of this $6.14 a day was paid $367.03 for tire renewals, and the cost of repairs was $101.37.

Revenue of a Two-Ton Truck.

A similar record for a year of the earnings, expense and net earnings of a two-ton Atterbury truck, owned by Charles Wade, from July 1, 1917, to June 30, 1918, showed the following totals:

Month	Business	Expense	Due Wade
July, 1917.....	$365.96	$126.54	$239.42
August, 1917..	326.75	127.35	199.40
September, 1917	275.39	125.77	149.62
October, 1917..	290.78	131.21	159.57
November, 1917	230.55	121.12	109.43
December, 1917	475.10	182.62	292.48
January, 1918..	429.45	206.52	222.93
February, 1918	416.15	158.28	257.87
March, 1918....	346.70	170.40	176.30
April, 1918.....	324.73	253.54	71.19
May, 1918.....	426.36	247.25	179.11
June 1918.....	370.00	210.60	159.40
Total.....$4277.92		$2061.20	$2216.72

*Expense exceeded revenue $184.06.

This shows that the average earnings or "business" was $356.40 a month, the average expense a month was $171.78 and the average amount received each month by Wade was $184.56. Assuming 300 working days for the year this showed a daily earning of $14.26, an expense of $6.87 and a net receipt of $7.37.

The rates charged for service are $3 an hour for a five-ton truck, $2.50 an hour for a 3½-ton truck and $2 for a two-ton truck, based on a 10-hour day and 40 miles driving for a 3½-ton truck and a 10-hour day and 50 miles for the two-ton truck. The rates include the driver. The expectation is that the five-ton trucks will earn from $600 to $700 a month and the 3½-ton trucks from $500 to $600 a month.

PIERCE-ARROW PLANT IS GREATLY ENLARGED.

Increased demand for Pierce-Arrow trucks and cars has resulted in a big addition in manufacturing facilities—more factory buildings, machinery and tools, and larger personnel. This growth found graphic expression recently in the "unveiling" at the Pierce-Arrow factory in Buffalo of one of the largest concrete smokestacks in the country. The stack serves a powerful, new battery of boilers, which constitute the heart of the plant, furnishing the power for heating, lighting and manufacturing.

It towers 220 feet above the ground, is 17 feet in diameter at the base, tapering to 12 feet at the top. It weighs 1090 tons. The new power plant of the factory consumes more than 33,000 tons of coal a year.

NATIONAL HEARSE AND MOTOR INCREASE CAPITAL.

The National Hearse and Motor Co., Grand Rapids, Mich., at its annual meeting, elected as directors Joseph Renihan, S. R. Fletcher, A. W. Brown, J. Northoek, S. V. McLead, George Liverton and Walter Ioor. Reports showed a profit of more than $9000 and orders amounting to $230,000. To procure the capital necessary to handle this large volume of business the stockholders voted to increase their present holdings 10 per cent.

PACKARD AIRPLANE DEPARTMENT.

The Packard Motor Car Co., Detroit, announces that while it is not making a stock airplane, it has a department to execute special orders or to advise and figure with transportation companies, the government or private individuals who might want aircraft for commercial or passenger purposes. This is the first announcement by an automobile manufacturing company that it is in the airplane business for general or commercial purposes.

SALES FORCE GIVE DINNER TO ROE.

Sixty members of the sales force of the United States Tire Co. gave a dinner recently to Edward S. Roe in honor of the completion of his 10th year as New York district manager.

DENIES ARMY CARS ARE BEING DISPOSED OF.

Brig.-Gen. C. B. Drake, chief of the Motor Transport Corps, has issued an order denying that excess automobiles of the corps are being disposed of. The order follows:

"The following is published for the information and guidance of all members of the Motor Transport Corps, and all others interested.

"Numerous and persistent reports have reached this office to the effect that various camps and depots of the Motor Transport Corps are disposing of excess automobiles by private and public sale.

"None of these reports can be founded on fact, as there is no authority whatever for such action, excepting as regards equipment which has passed beyond the stage of usefulness on account of having been wrecked or worn out, and for this class a proper channel for disposal is provided in A. R. No. 717, as amended.

"All commissioned, non-commissioned, enlisted and civilian personnel of the Motor Transport Corps are directed to contradict in each case any such rumor coming to their notice, unless same can be substantiated, in which event an immediate report will be made to the office of the chief, Motor Transport Corps (through channels), of any information bearing on this subject that may be likely to lead directly to the source of such rumor."

NEW COMMITTEE FOR HURLBURT TRUCK CO.

A new official merchandise creditors' committee has been appointed for the Hurlburt Truck Co., New York, supplanting the orgiinal creditors' committee. The new committee includes H. G. Banta of Edward C. Stiffler, Inc.; M. L. Bayard of the Keystone-Hindley Gear Co. and E. H. Broadwell of the Fisk Rubber Co. The business of the company is being continued. President Hurlburt, who was appointed receiver, was authorized to borrow $50,000, but has required only $16,000 of this amount.

TRUCK DEALERS HOLD OWN SHOWS AT BALTIMORE.

Commercial car dealers held special exhibits at their sales rooms during the Baltimore show, conducted by the Baltimore Automobile Dealers' Association and the Automobile Club of Maryland. Thirty-three dealers held shows, exhibiting 39 makes of trucks, three types of trailers and three tractors. The commercial car men reported that they met with much success.

KELLY-SPRINGFIELD DIVIDEND.

Directors of the Kelly-Springfield Tire Co. have declared the usual quarterly dividend of $1 a share. The stock took a big leap in price before the dividend was declared, some of the traders entertaining views that something better than the usual 16 per cent. rate on the stock, par $25, might be paid.

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GROWTH OF THE ACASON TRUCK PLANT.

By N. H. Meyers.

WHILE it is rumor that declares that the Acason Motor Truck Co. will soon be forced to expand and will be in a new plant in a short time, there is still much fact behind this statement. The phenomenal healthy growth of this manufacturer of heavy duty trucks demands that the rumor be a fact and basing judgment on the characteristic foresightedness of H. W. Acason, president of this well established concern, there is no doubt but what a statement of a new factory will soon be forthcoming.

Out here in Detroit the progress of the Acason company is regarded as praise worthy and is gratifying to other automotive manufacturers. The company has been conservative and consistent. It has had a growth that the substantial manufacturer, business man and banker can approve as representative. It has not been a spectacular progression, but due more to hard plodding, such as eventually wins success.

It must not be inferred that the Acason company is cramped for space—that it is unable to take care of their business demands. The company has made deliveries promptly, but the expansion plans are impelled by dealers who know the merits of Acason trucks and are increasing their orders and by their requirements are in a sense forcing the increase of production facilities.

Back of the Acason truck is a good substantial organization. Vice President Harry A. Conlon points with pride to the fact that Acason dealers are making money at the least worry. The dealers who have had Acason name plates on their windows for a long time have realized with pride the strides that have been made as a result of the stability of the company and their own efforts.

One year ago Acason trucks were exhibited to the New England public for the first time at the auto show, although they had been produced for a number of years and were in use in other sections of the country. The time was ripe for Acason trucks to "go big," but the war demands were imperative and the greater part of the production was diverted to army orders and war work.



Harry A. Conlon, Vice President and Director of Sales, Acason Motor Truck Co.

To be the only concern to have its product adopted as standard equipment at the world's largest shipyard, Hog Island, to be the only manufacturer to supply the government with a motor propelled aeroplane trailer to carry a complete aeroplane and to pile up records for endurance and utility in the English and French service in the war zones of Europe, are evidences of Acason quality. Acason trucks gave satisfaction in every test. This was a result anticipated by the company.

About this time of the Boston show the Acason company was to bring out a one-ton capacity model, but production was delayed until the end of the war. Then it was announced and within a fortnight Vice President Harry Conlon had received orders for 168 of this type. Since that time the Acason company has received many more orders for this capacity chassis.

The Acason company uses the highest type units in the construction of its trucks, including Waukesha engine, Timken axles, Eisemann magnetos, Stromberg carburetors, Borg & Beck clutches and Detroit Steel Products springs. And these units are correctly coordinated into the complete unit. "Service is in-built in Acason trucks" is a phrase that Advertising Manager D. F. Whittaker uses, and from the service reports he is correct.

In addition to the one-ton size the Acason company also manufactures two ton, 3½ ton and five-ton capacities. The one-ton truck is equipped with pneumatic cord tires, which naturally increases its carrying capacity somewhat.

"The Acason will always live up to its name as being a truck for the owner," President H. W. Acason told me. "We will build a good truck, using only the highest class units. We prefer that our growth shall be gradual, normal and healthy. We want every Acason owner to realize his truck is an investment and we want him to be able to obtain his haulage costs at the least expense and worry. There is much more satisfaction for me to have an organization selling a product that is producing for owners financially and at the same time be content, than it is for me to try and place myself as a quantity producer."

TRUCKS ARE FEATURE AT ST. LOUIS SHOW.

There were 22 truck exhibitors at the St. Louis show under the direction of the Automobile Manufacturers and Dealers' Association. There were 62 exhibitors of automotive equipment on the second floor, the trucks and passenger cars having the first floor. Five thousand dealers attended. Business on the floor was remarkably large. Robert E. Lee was again manager of the show, which went off very nicely in every respect. There were more than 250 cars exhibited.

TELECATOR HAS NEW YORK OFFICE.

An office in Aeolian Hall, New York City, has been opened by Herbert H. Scott, president of the Scott Corporation, Chicago, manufacturer of the Telecator, an instrument for locating faults in car and truck engines. Guy Rickenbaugh is in charge of the new office.

SAYS ARMY TRANSPORT SOUGHT LIGHT TRUCKS.

Lieut. Christy Walsh of the Motor Transport Corps, says that a few more months of war would have been a great demonstration of the value of the lighter trucks. While the giant trucks accomplished wonders, he says, Motor Transport Corps officials were eager for a great fleet of lighter cars that would go where the larger machines could not.

"No commercial organization with returned soldiers on its pay roll," states Lieut. Walsh, "will retain other than motor driven vehicles, for no soldier that has ever seen motor truck performance will be content until such economy and efficiency are a part of his employer's organization."

The Dorris Motor Car Co., St. Louis, Mo., is putting out a new model truck of 3½ tons, known as model K-7 and selling at $3800.

IOWA TO SPEND $250,000 ON LINCOLN HIGHWAY.

Iowa roads and bridges during 1918 cost a total of $14,095,753, a decrease from the 1917 figures of $1,069,723. Roads, county and township, cost $7,286,935. Bridges and culverts cost $6,808,818. Thirteen counties in Iowa through which the Lincoln Highway passes spent on that thoroughfare approximately $230,068. The state will spend nearly a quarter of million dollars on the Lincoln Highway this year.

TO MOTORIZE KALAMOZOO FIRE DEPARTMENT.

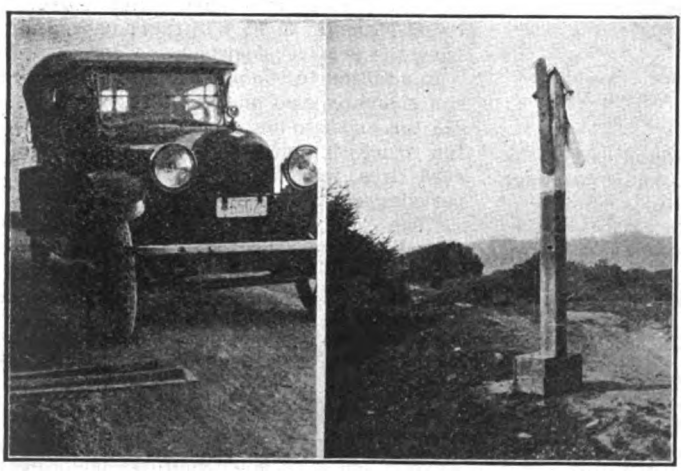
Two motor trucks have been added to the fire department in Kalamazoo, Mich., making four now in use. Two more have been shipped from the factory and as soon as these are received it is planned to order smaller trucks for the outlying stations, so that the department will be completely motorized.

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PFOST ROAD WARNING SIGNAL.

Every person who has driven a power vehicle can appreciate a signal that will warn of danger. Verbal instructions may be followed, signs may be observed, but there is no assurance that these will have the desired result—stopping the driver when approaching danger. One of the faults common with humanity is to forget or to disregard conditions that should demand the exercise of extreme care. This applies to what is known, but as the disposition of a very large part of those who drive automobile vehicles is to traverse highways unknown to them and they are for that reason unaware of danger, there is constantly increased need of warnings that will be sufficiently prominent to attract the attention of every one passing.

A type of warning that has much to commend it and which, because of comparatively small cost might be adopted almost universally, has been installed in the mountains of Humboldt county, California, by G. W. Pfost, a ranchman, at different points along a road on which he frequently travels. This consists in effect of a wooden post on which are pivoted two wooden arms painted bright red, somewhat similar to a railroad semaphore. These units are erected at points where there is danger. On either side of the post at a distance of 165 feet is a trap, such as is used to throw an automatic gate, and when a vehicle passes over these traps the arms of the signal posts are caused to revolve rapidly. The red revolving arms can be seen a distance of at least 200 feet and indicate danger, even though the warning may be given by a vehicle that is not within the range of vision.



Semaphore Type of Danger Signal Erected by a California Rancher That Has Great Possibilities for General Use.

Such signals are placed at sharp curves, dangerous descents and other points where there may be possibility of collision of vehicles approaching each other in opposite directions. They can be made decidedly useful wherever there is traffic, but will have special value wherever there are dangers and the highways are not in general use.

Honor Blocker is now advertising manager of the Republic Rubber Corporation, Youngstown.

Night Trucking Ban Asked for Back Bay Streets

Boston street commissioners are to pass an order for the exclusion of heavy traffic at night between Charles street and Massachusetts avenue, thus forcing hundreds of motor trucks and other vehicles used for the transportation of "goods, wares and merchandise" into different territory. The decision of the board, which will be the most vital in many respects since the passage of the traffic regulations, will include also Marlboro and Newbury streets, for it is realized that with so much traffic diverted from Beacon street the other parallel thoroughfares would soon get the heavy vehicles.

The Marlboro street exclusion zone would extend from Arlington street to Massachusetts avenue, while that for Newberry street, would be between Arlington street and either Gloucester or Hereford streets.

A public hearing on this subject was held Jan. 24, when it was argued that the heavy traffic disturbs the slumber of residents of these thoroughfares. Before reaching a decision the commissioners visited New York to ascertain if that city had handled similar problems.

New York diverts traffic with most satisfactory results, but it was not until Aug. 23, 1918, that such a means of meeting problems similar to those in Boston were adopted. New York has begun its traffic experiment on the great parallel avenues which extend for miles through the heart of the city. Thoroughfares are designated for passenger and freight traffic alternately, though the exclusion is for the day time. It seemed to the Boston visitors that such stringent rules were not necessary in New York, with its wide avenues and its excellently directed traffic routes; but the Gotham traffic experts have found that the exclusions help the general current of traffic very materially, besides affording relief from noise and many similar burdens.

TIMKEN MAGAZINE.

The February number of Timken Magazine is crowded with interesting articles. Among these is one entitled, "Is It Going to Be Cooperation or Competition" "The Genius of the Maccar Truck Co.," "Bonus for Motor Truck Drivers," "Running a Service Department According to a Well Defined System," "Is There Any Money in the Garage Business" and "Rosenheim Explains How It Happens" are other features.

SEMI-TRAILER ECONOMY FULLY PROVEN BY WAR WORK.

"The semi-trailer has conclusively demonstrated its practicability for heavy haulage work during the last 18 months," says H. C. Fruehauf, general manager of the Fruehauf Trailer Co., Detroit, "has proven itself an economical, efficient transportation unit for practically all industry—particularly for lumber and logging where millions of feet of timber used in government work have been transported by semi-trailers.

"Practically the entire output of Fruehauf trailers during the last year and a half has been utilized either directly or indirectly for war work. We have built semi-trailers for transportating aeroplanes as well as steel for shells, food products for our army and navy and logs and timber for ships—and in every instance the truck trailer units have lowered haulage costs, often as much as two-thirds.

"By utilizing the reserve power of motor trucks and as a truck can pull three to four times as much as it can carry, with our semi-trailers, two-ton trucks can haul six-ton loads; 3½-ton trucks 10-ton loads. Fruehauf trailer owners testify that the annual saving through the operation of these units averages from $1000 to $3000 per unit.

"With the fact that semi-trailers do cut transportation costs becoming more generally known, the demand for trailers is increasing every day, every month. Although our production has increased, we do not expect we can supply trailers in numbers to keep pace with the demand."

FORD PRICES REMAIN UNCHANGED.

Following a conference, at which its principal branch managers, distributors and foreign representatives were present, the Ford Motor Co., Detroit, Mich., issued this statement: "The policy of the Ford Motor Co. to sell its cars for the lowest possible price, consistent with dependable quality, is too well known to require comment. Therefore, because of present conditions there can be no change in the prices of Ford cars, which remain as follows: Runabout, $500; touring car, $525; coupelet, $650; sedan, $775; truck chassis, $550.

BRISK BLAST CO. BUYS SWISS MAGNETO PLANT.

The Brisk Blast Co., which is making pumps for automobile tires, has purchased the factory buildings formerly occupied by the Swiss Magneto Co. in Monroe, Mich., and will soon start the erection of a foundry, as its commercial foundry business has been expanding greatly.

TRADE ASSOCIATION MEETS.

The first meeting of the Motorcycle and Allied Trades Association since the termination of the war, held at Cleveland, O., was the largest and most enthusiastic that organization has ever held. Readjustment measures were discussed. H. S. Quine of the Goodyear Tire and Rubber Co. is president.

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OPPOSES BAY STATE PLAN TO BOND AUTOISTS.

Opposition to a bill requiring owners of motor cars to post a bond of $2000 to meet possible liability was voiced by James Fortesque, representing the Boston Motor Truck Association, and James T. Sullivan, representing the Bay State Auto Association, before the Joint Judiciary Committee of the Massachusetts Legislature.

Leland Powers, who introduced the bill, admitted, in answer to questions, that there were a great many owners of machines who could not furnish a $2000 bond.

It was brought out that insurance companies have generally declined to insure taxicabs, "jitneys" or parcel delivery autos. In Kansas City one insurance company insured taxis at $250 a year, but lost considerably by it. A report of the State Highway Commission was read, in which it was suggested that local communities regulate their own automobile conditions. The report said it would be unjust to the autoists of Massachusetts to compel them to furnish bonds, while the residents of adjacent states, often visiting Massachusetts in their machines, would not be required to do so. The commission reported that it could not draft any measure that would be fair and equitable.

Mr. Fortesque said a law requiring autoists to put up a bond would work a hardship on the poor man, and would put a number of individual taxi owners out of business.

TRUCKS CREATE INTEREST AT LOUISVILLE SHOW.

Trucks and tractors created great interest at the automobile show in Louisville, Ky., held under the auspices of the Louisville Automobile Dealers' Association. The show was the biggest success ever and all previous attendance and sales records were smashed. Seventy-seven different makes of passenger and commercial cars are handled by Louisville dealers and distributors, and nearly all of these were exhibited. Louisville products included the Old Hickory truck, made by the Kentucky Wagon Manufacturing Co., and the Dixie Flyer.

ROCKWELL LEAVES STANDARD WELDING CO.

L. D. Rockwell has given up his contract as eastern representative of the Standard Welding Co., now a division of the Standard Parts Co., and sales will now be handled directly from the factory. Mr. Rockwell will continue with his other accounts.

AUTO SHOW AT EASTERN STATES EXPOSITION.

There will be an automobile show in connection with the Eastern States Exposition, which will be held in Springfield, Mass., Sept. 14-20. J. C. Simpson, 292 Worthington street, Springfield, is general manager.

ALL-RUSSIAN CENTRAL UNION SOCIETIES INVITES TRADE.

As a means of establishing direct contact with manufacturers, the All-Russion Central Union of Cooperative Societies has opened a buying agency for the United States, at 167 Post street, San Francisco, to procure machinery and supplies where available quickly, advantageously and in large quantity. The organization claims that the bulk of Russia's buying power, exercised by 80,000,000 persons, through membership of 20,000,000 families in 30,000 cooperative societies, forming 500 provincial unions, is concentrated in the All-Russian Central Union of Cooperative Societies.

"Controlling vast stocks of raw materials, produced in Russia and Siberia, the Central Union desires to promote on a large scale commercial intercourse with America," reads its announcement. Manufacturers and dealers are asked to send in duplicate information, catalogues and quantity prices for their products for export trade. Alexander Zelenko is the American representative.

NOW MAKING DELIVERIES OF OLDS TRUCK.

Deliveries of its new ¾-ton truck have been begun by the Olds Motor Works, Lansing, Mich. The truck has a four-cylinder engine, 128-inch wheelbase, Torbensen internal gear drive, Goodyear cord tires, 35 by 5, and starting and lighting system. It weighs 2775 pounds when ready for the road. The chassis, with instrument board, windshield, cowl and fenders, but no seat, sells for $1250; with steel cab and sill ready for mounting stake, stock rack, grain dumper or box body, $1295; with express body, $1350.

TRUCKS MOVE BOSCH OFFICE EQUIPMENT.

Seven Packard trucks moved the entire office equipment of the American Bosch Magneto Co. from New York City to Springfield, Mass. They made the 200-mile trip in about 20 hours.

WILLYS-OVERLAND PLANS TO TRAIN EMPLOYEES.

The Willys-Overland Co. has inaugurated a department for the technical training and advancement of employees "where learning can be done while earning." The department occupies two floors of a factory building in the company's plant. Machine shops, tool and die rooms, inspection, drafting and lecture rooms form part of the equipment. Men will enter this course of training only at their own request, as the work is entirely voluntary.

Men will receive instruction during working hours. Old employees will be paid within 10 per cent. of their former wages while in training. They may enter training for a short period of time or for a longer period, according to the instructions they require to fit them for the advanced work they desire to undertake.

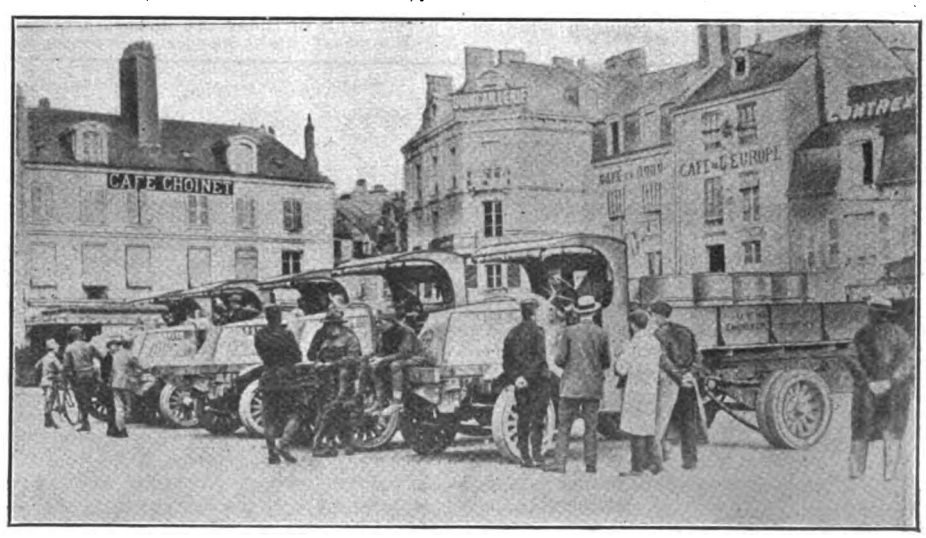
Men may enter the training department at any time or leave at any time. They may return to their old positions if they so desire after this training, or if successful in their training work, they will be promoted to better jobs with higher wages.

All instructors are practical production men, selected for their extensive factory experience. The instruction, therefore, will relate in every detail in a practical way to the kind of work for which the man is preparing. No agreements will be required of those entering training and no contract will be made. No age or educational qualifications will be asked.

GRAND HAVEN BRASS CHANGES.

William Zocrner, founder of the Grand Haven Brass Foundry Co., Grand Haven, Mich., has withdrawn from the management, although retaining an interest, and an interest has been bought by Paul Johnson and Alvin Jacobsen, Muskegon.

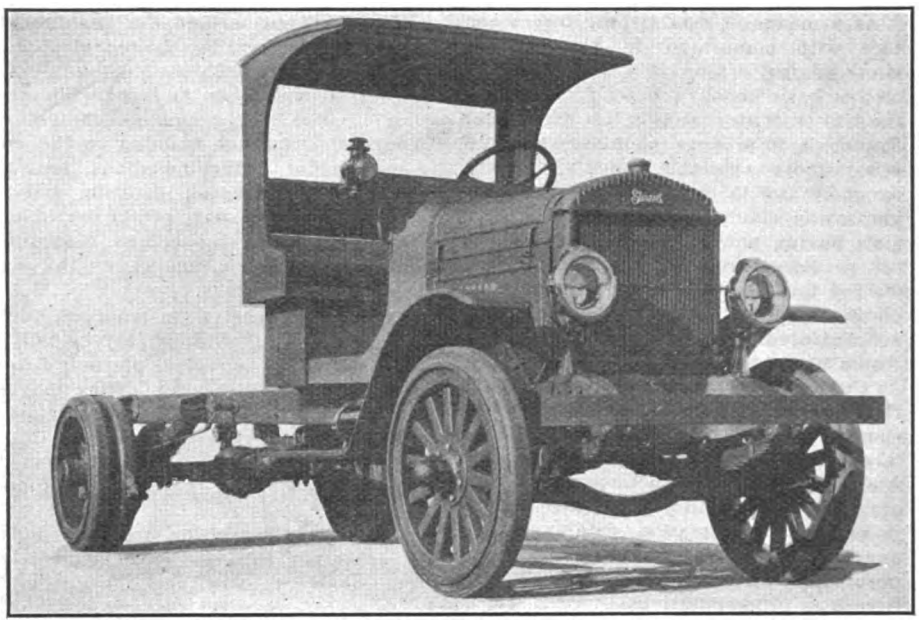
The Capitol Truck Co., Indianapolis, has added the All-American truck to its agency.



Convoy of Mack Trucks Stopped in Brest, France, Which Was One of the Principal Ports Used by the American Expeditionary Force to Enter the European Conflict.

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STEWART MODEL 10 3½-TON TRUCK.



The Stewart Model 10 Truck Chassis, Capacity 3½ Tons, with Complete Equipment and Driver's Cab, the Cab Being Extra Equipment.

STRUCTURAL strength is one of the qualities of the 3½-ton truck chassis it is now producing commercially that is emphasized by the Stewart Motor Corporation, Buffalo, N. Y. The machine specified as model 10, is the largest the company has built and it has been designed with the object of affording heavy duty with minimum upkeep and comparatively low operating expense.

The Stewart corporation has for a long time specialized trucks, but confined its production to the smaller sizes for which there was gratifying demand. Stewart sales representatives developed so many prospects for a larger size machine that the company decided to built what would, in the judgment of the engineers, meet practically every need for heavy haulage and the design was determined after a long period of development. The truck would have been in the market months earlier had not the general war activities curtailed the materials market and limited the production of the industry.

The engineers have produced what is regarded as being a finished chassis, incorporating in it the latest and best construction units obtainable, and have adopted the Clark internal gear drive rear axle which had afforded a very gratifying degree of satisfaction in the smaller machines. The design does not in general differ greatly from the other Stewart trucks save for the installation of an external contracting emergency brake on the main driving shaft, the service brake operating on the large drums on the hubs of the rear wheels.

Chassis Units Extremely Accessible.

The chassis has been simplified and has been developed with a view of obtaining extreme accessibility. The power plant is a unit type, so that only the power transmission system is at the rear of the foot board, and the construction is such that there is seldom need for attention to this. The units have large factors of safety and all moving contacting parts are of unusual proportions to reduce the wear. Not only this, so far as possible all of these are housed and carefully lubricated, so there ought to be exceptional endurance and, logically, low maintenance and upkeep cost. The claim is made that the operating expense is comparatively small, for by careful proportioning the weight has been kept to 6080 pounds for the chassis without the driver's seat, which is relatively light for the rated load capacity.

The chassis frame is designed to have an unusual degree of flexibility, there being but three cross members, not including a large channel section bumper at the forward end, nor the brake shaft or the engine support arms.

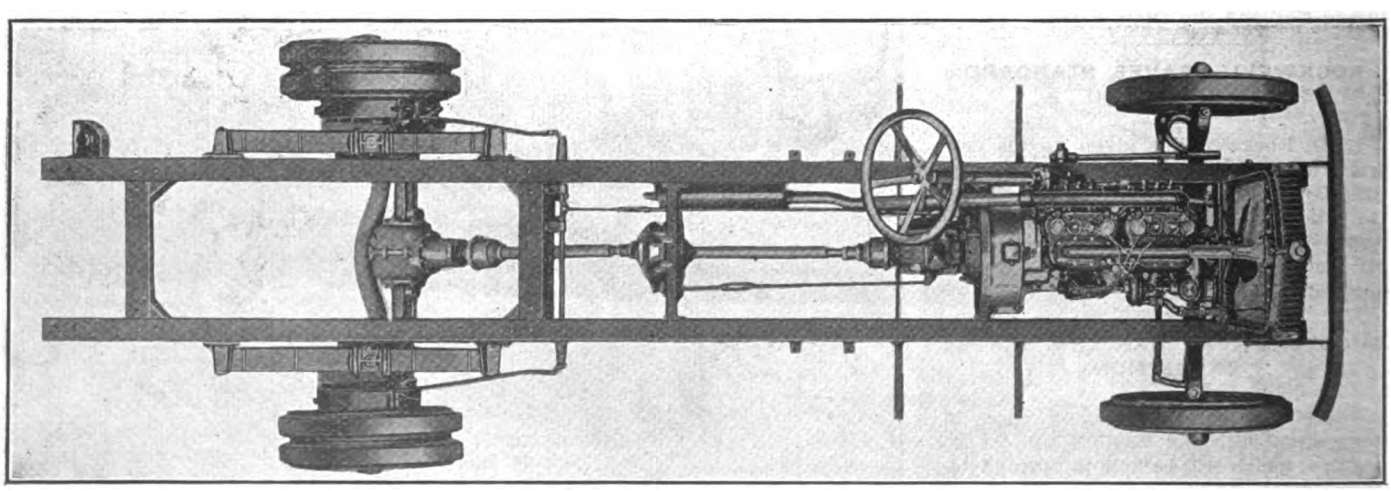
Continental Red Seal Engine.

The engine is a Continental Red Seal, a four-cylinder, four-cycle, water cooled, vertical, L head type, having bore of 4½ inches and stroke of 5½ inches, that is rated by the S. A. E. formula at 32.40 horsepower, but is claimed by the maker to develop 45 horsepower at maximum speed. The cylinder units are cast in pairs with the water jackets integral, with the heads open, these being closed by large plates retained by series of cap screws. The engine crank case is cast in two sections, the upper half carrying the bearings and the operating mechanism, and the lower half being the crank chamber and the oil reservoir. The timing gearset is enclosed in forward extensions of the sections, and rear extensions form the bell housing for the flywheel. The crankshaft is a three-journal type and main bearings have unusually large length.

The engine is cooled by a circulation of water through the cylinder jackets forced by a centrifugal pump, and by an armored type radiator with a cooling section of vertical finned tube. The top tank of the radiator is finned to promote cooling. The unit is mounted on the frame so as to be protected from road shock and chassis distortion. Engine is equipped with an 18-inch steel fan mounted on a ball bearing on an adjustable bracket and is driven by flat belt from the water pump shaft.

Combination Lubricating System.

The lubrication is by a combination force feed constant lever system, the oil



Plan View of the Stewart Model 10 3½-Ton Truck Chassis, Stripped to Show the Flexible Frame Construction, the Power Transmission System Plant and the Clark Internal Gear Axle and the Powerful Emergency Brake on the Main Shaft.

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being drawn from the reservoir through a filtering screen by a double plunger pump and forced to the main bearings and the timing gearset. The cylinders, pistons, wristpins, camshaft bearings, cams and valve tappets are lubricated by the splash of the big ends of the connecting rods in the troughs in the base of the crank chamber into which they sweep.

The ignition current is supplied by an Eisemann high-tension magneto with a fixed spark and the fuel is drawn from a 20-gallon tank under the driver's seat through a Zenith carburetor, with the customary throttle and foot accelerator control. The engine is governed by an automatic flyball type governor driven by spiral gears and a straight line shaft.

The Power Transmission.

The clutch is a multiple dry disc type, the discs being faced with anti-friction fabric, that is fully enclosed and practically self-adjusting. It requires very little attention and is very easy engaging. The transmission gearset is a selective sliding gear construction having four forward speed ratios and reverse. The heavy gears are nickel steel, large diameter and wide faced, and the shafts are special alloy steel, double heat treated, that are mounted on annular ball bearings throughout.

The power transmission system is a large tubular two-section shaft fitted with three universal joints housed in dust and grease tight cases, the rear end of the forward section being carried by an SKF self-aligning bearing on a heavy frame cross member. The shaft is coupled to the pinion shaft of the jackshaft of a Clark internal gear axle. This axle consists of the round dead axle that carries the load and the jackshaft that is mounted ahead of this, the central section of the jackshaft housing being bolted to the dead axle and the ends of the jackshaft housing being carried in the flanges that support the brakes and enclose the internal gears and pinions. The dead axle is chrome nickel steel with the large wheel spindles integral and it is heat treated. All the shafts and gears of the jackshaft and axle are nickel steel. The ratio of reduction in the axle is 10 to 1. The front axle is a nickel steel drop forging, heat treated, with hardened and ground spindles and pivot pins, that is fitted with large taper roller bearings.

The Frame and Running Gear.

The frame is constructed of pressed channel steel 7 1/16 inches wide with 3¼ inch webs and 9/32 inch thick, the side members being 243 inches long. The frame has three cross members, the front one being removable. The frame is intended to take a 12-foot body. The frame is suspended on semi-elliptic springs, the forward set being 41 inches long and 2½ inches wide, and the rear set 54 inches long and four inches wide. These have full length rebound plates and the eyes are fitted with oilless bushings, so that oil or grease cups are not necessary and the springs cannot wear because of lack of lubrication.

The wheelbase is 165 inches standard, but may be made 185 inches at nominal extra cost. The tread is 58 inches forward and 70 inches rear. The wheels are wood, artillery type, the forward set having 12 2¼ inch spokes and the rear set 14 3½ inch spokes. These are shod with 36 by five inch solid band tires forward and 36 by five inch dual solid band tires rear. The tires are the pressed-on type.

Steering Gear and Control.

The steering gear is a worm and nut irreversible unit at the left side, equipped with a 20-inch hand wheel, and the control is by foot pedals for the clutch and service brake and hand levers for changing gears and the emergency brake in the center of the footboard. The service brake has external contracting band shoes acting on drums 20 inches diameter and three inches wide on the hubs of the rear wheels, the shoes being lined with asbestos fabric. The countershaft is fitted with oilless bearings. The emergency brake is external contracting on a drum nine inches diameter and five inches wide on the main shaft, this being a double shoe type and mounted on a heavy frame cross member.

The chassis is equipped with driver's seat, oil dash and tail lamps, steel channel bumper, fenders, running boards, mechanical horn, tool box, tool kit and jack. A driver's cab is furnished as an extra.

BIG CAR AND TRUCK SHOW FOR BROOKLYN.

The eighth annual automobile show of the Brooklyn dealers will take place in the 23d Regiment Armory, March 29-April 12, and will probably be the biggest ever held in Brooklyn. It will be a "double-header," with the first week devoted entirely to the passenger cars and the second week to trucks. Accessories and parts will be exhibited at both sections of the show.

Two years ago the Brooklyn Motor Vehicle Dealers' Association staged the first truck show ever held in Greater New York since 1913, and it was a great success. Judging from indications the truck section of the coming show will be greater than ever, as manufacturers and dealers recognize the value of Brooklyn and vicinity as good selling territory. There will be everything to interest the business man and farmer, from light delivery wagons to tractors.

In addition to the Brooklyn dealers, manufacturers and dealers from other cities have been allotted space. I. C. Kirkham, 1365 Bedford avenue, Brooklyn, is director of the show. Practically all the space for both sections has been allotted.

Coming at a time sufficiently long after the New York show, the automobile dealers will have had the opportunity to add to their product new ideas which were not seen at the Manhattan exhibit.

WILSON BODY PRODUCTION NOT HALTED BY FIRE.

The C. R. Wilson Body Co., Detroit, suffered a fire, with $400,000 loss, which practically destroyed the assembling plant. Many of the 1000 employees were sent to other plants of the company in Detroit, and others to the Bay City factory. Production will not be seriously impaired, officials say.

VALUE OF SINGLE PNEUMATIC TIRE EQUIPMENT.

With the increased use of motor trucks in diversified services it is obvious that no one style of tire can best meet all requirements. With some there is a recognized need for pneumatic tires for trucks. Truck manufacturers and truck users have been experimenting the use of dual pneumatics—two tires on each rear wheel. Many passenger 'busses and fire apparatus have been so equipped.

This equipment has disadvantages which largely offset the cushioning benefits secured, in the opinion of L. C. Rockhill of the Goodyear Tire and Rubber Co.

"Inequalities of the road surface throw an undue proportion of the load on one or the other of the dual tires, in case of puncture one tire often carries the strain of the whole load," he explains. No two makes of tires are exactly the same size and cross section and, therefore, even if road conditions are absolutely perfect, one tire carries more of the load than the other. Identical air pressures cannot be maintained in any two tires in actual service.

"The removal of the inside tire necessitates the removal of both tires, which means double work in making a tire change. All of these difficulties are obviated by the use of single pneumatic cord tires and many benefits added that duals never provided.

"We are now making Goodyear pneumatic cord tires for motor trucks in sizes 36 by 6, 33 by 7, 40 by 8, 42 by 9 and 44 by 10, for all sizes of trucks up to five tons capacity. They are made in the same manner as cord tires for passenger cars, except that there are more plies of cords, the sidewalls are sturdier and the treads much thicker.

"They permit greater speed, which means that a truck in general use may make more trips daily. Not only are these tires proving their worth by providing greater cushioning and freedom from tire trouble, but they greatly reduce repair expense and increase the life of the truck.

"The foremost tire engineers of the country have declared in favor of the single pneumatic tire for trucks, and some have predicted that within a few years practically all ton and 1½-ton trucks will leave the factory on pneumatics.

"When the United States entered the war it was found desirable to equip a considerable number of trucks with pneumatic tires, and the question of single or dual tire equipment come up for settlement. It is interesting to note that the Signal Corps, which operated many trucks during the war, declared for the single pneumatic and used thousands of them to secure the mobility of operation which the service required."

INDIANA POWER VEHICLE LICENSES.

There were 227,160 automobile licenses issued last year in Indiana. In 1917 there were 192,195, in 1916, 167,165 and in 1915 137,000. There were 990 dealers' licenses issued last year.

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TIME SAVING TRUCK EQUIPMENT IS WORTH WHILE.

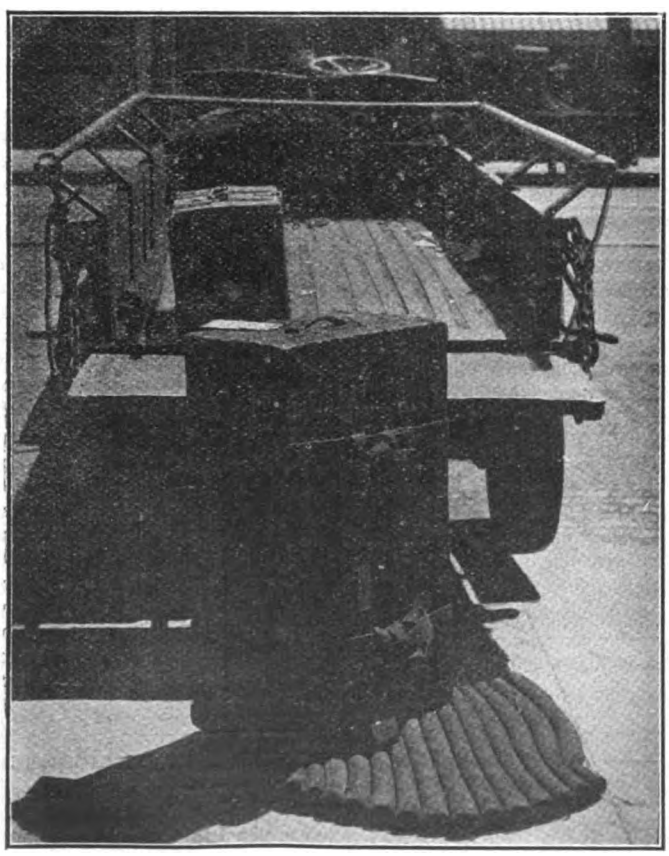
Statement is often made that the productiveness of a power vehicle used for haulage, both with reference to work done and economies obtained, depend very largely upon the resourcefulness of those using or owning them. As a matter of fact the man who has the largest measure of success is not necessarily the genius, but he who has the faculty of applying the ideas of others to his own needs.

The primary object of using a truck that costs more to operate than an animal equipment is saving of time and labor. Next the object is to economize the time of the truck and the crew by quick loading and unloading, so that anything that will contribute to this result is worthy of consideration.

What is probably one of most surprising accessories for trucks used for transporting trunks and baggage is used by a haulage concern in Los Angeles. This company handled thousands of trunks annually. The weights of these vary greatly. Two men is a rather expensive crew for a baggage, and while one man can perhaps handle average trucks with reasonable rapidity when accustomed to the work, the trunks will generally suffer because they are often dropped from the truck to the sidewalk or roadway.

This company has provided for each of its trucks a large mat made of sections of heavy air hose from 1½ to 2½ inches diameter. Through the hose sections about 2½ inches from the ends quarter-inch holes are cut, and steel rods are passed through the holes and secured by locked nuts. These are carried and before unloading one or more trunks the mat is thrown under the tailboard. The trunks may be dropped on these without danger of damage, no matter how rapidly they are handled. The time of the drivers and the trucks are economized, the customers are better satisfied and the cost of the equipment is exceedingly small.

So far as known this concern is the only one that has used unloading mats, but there appears to be no reason why such mats could not be very widely utilized, at least by concerns that have to handle cases and packages of different kinds, and want to do their work with the smallest number of men.



Mat Constructed of Sections of Air Hose Held by Steel Rods, Used by a Los Angeles, Cal., Transfer Co. to Protect Baggage.

PIERCE-ARROW TRUCK ORDERS CANCELLED.

The government, it is reported, has cancelled orders for about 500 trucks placed with the Pierce-Arrow Motor Car Co., Buffalo. This would leave the company with government orders for 1000 trucks. The government has cancelled all of its airplane contracts with the company.

MAY STANDARDIZE SHIPPING OF CARS AND TRUCKS.

As a result of a conference between representatives of Michigan automobile manufacturers and representatives of the National Automobile Chamber of Commerce, the Master Car Builders' Association, the United States Quartermaster's Department and the Detroit Traffic Club, shipping of motor vehicles, both passenger cars and trucks, probably will be standardized within a short time.

At the height of automobile production prior to the war many manufacturers shipped from 50 to 100 carloads a day. At times the Ford Motor Co. required 300 or more carloads. In some cases only three automobiles were shipped in a car. In other cases there were four or five, while Fords to the number of six were often in one freight car.

There has never been any uniformity in loading cars. Army officers and the Master Car Builders' Association have been studying this subject, and their proposed specifications and blue prints were examined at the conference — which was held at the Detroit Board of Commerce.

CANADA POSTAL RULES ON TRADE LITERATURE.

Automobile and accessory firms contemplating sending trade literature to Canada should comply with the strictly enforced regulations governing the delivery, within the Dominion, of trade literature through the mails in bulk. Bona fide trade catalogues and price lists not designed to advertise the sale of goods by any one person in Canada may be imported duty free in single copies addressed to merchants in Canada and not exceeding one copy to any one merchant for his own use and not for distribution. Large numbers of valuable catalogues mailed to Canada by American manufacturers have been returned undelivered owing to the refusal of the addressees to pay duty thereon.

The total value of all of the separate pieces of matter should be first ascertained and duty paid, customs slips for which purpose are obtainable at the principal ports in the United States. Each piece of matter should have written or stamped on the outside wrapper or envelope the words "Duty paid." Catalogues and advertising matter sent in bulk as ordinary merchandise are also dutiable.

PLAN TO DISPOSE OF ARMY GOODS IN FRANCE.

The United States Liquidating Commission announces that all superfluous material of the American Expeditionary Forces, now stored in vast warehouses throughout France, will be bargained off to Europeans, provided it is found cheaper to dispose of it there than transport it to the United States.

Belgium has already asked for a large number of automobiles, of which there are thousands still to be disposed of in the most satisfactory way to give the United States the benefit of a good transaction.

MAYNE NOW SOUTH AMERICAN AGENT.

Charles A. Mayne has been appointed Central and South American representative for the Republic Motor Truck Co., Alma, Mich., and will have headquarters in Mexico City for six months, after visiting Cuba and then the other Latin states.

STUDEBAKER PLANS FOR GREAT EXPANSION.

The Studebaker Corporation plant in South Bend, Ind., had a 1918 pay roll of $4,824,327. President A. R. Erskine expects the total in 1920 to be $17,000,000. The working force, now 4500, is expected to be increased to 16,000 next year.

George K. O'Donnell has become vice president in charge of sales of the Coe-Stapley Manufacturing Corporation, with headquarters in the New York office, which is now at 136 Liberty street.

The Torbensen Axle Co., Cleveland, O., will build a $75,000 addition to its plant.

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SERVICE STATION SYSTEM CUTS COST

Many dealers who operate elaborate service stations are so convinced that they cannot run this end of their business at a profit that they do not pay proper heed to the efficiency with which they are conducted. They want good work turned out, but they do not take sufficient interest to see that it is turned out as economically as possible.

When a dealer confesses to you that he would hesitate to take a customer through his service station because he fears it is "an awful mess," you can imagine how little interest he takes in it.

A service station should be kept in good order at all times. There is no excuse for it presenting an unwholesome appearance. Things should be done in such a systematic manner that workmen will take pride in keeping the place in good condition.

When a job is done the workmen should immediately clean up where they have been working. The disorder made necessary by the task should be made orderly, and everything put into readiness for the next job. This results not only in keeping the place clean, but also saves delay when the men are to start on a new job.

Every tool should have a certain place where it is to be kept when it is not in use, and it should always be put there. There is no excuse for delay due to finding needed tools.

There should be a sub-stockroom in every department, and this should be stocked with everything that will be needed in the department. The stock should be replenished daily and a complete inventory taken at least once a month. This will eliminate delay in sending to the main stockroom for whatever may be needed.

Workmen should be encouraged to invent time saving devices. The offer of prizes for the best suggestions will serve as an encouragement.

Stopping Thefts.

All movable articles in a car brought in for repairs should be immediately checked and stored in a safe place. The articles should be checked before the car leaves the general garage, and then they should be placed in a strong metal locker. When the car is ready for delivery the articles should be taken out of the locker and compared with the original list. The loss of articles in a service station not only displeases the customer, but makes him suspicious of the honesty of those employed there. Some dealers have printed signs displayed in each department offering a reward for information regarding the theft of property belonging to a customer or to the company.

Upholstery and other fittings of a car that might be damaged should be covered over before repair work is begun.

In order to avoid arguments regarding charges for work, it is advisable to give the customer an estimate when he brings in a car. Then have him sign the repair order authorizing work to cost this amount.

If you promise to have a job ready at a certain time, make every endeavor to carry out that promise. The time the car is to be ready should be stated on a card attached to it, and there should also be a blackboard reminder in each department.

In large service stations there should be telephones in every department. A bell signal can be installed, so that any one may be instantly located no matter in what part of the building he may be. For this purpose each one liable to call is assigned a number, similar to the box numbers on a fire alarm system. For instance, the superintendent may have the number 2-2. The signal sounds all over the building, so that a man knows when he is wanted. He goes to the nearest telephone connection and the operator connects him with the person calling him.

Before a car is taken into an elevator there should be a large tag on it stating just where it is to go. This system will do away with confusion and loss of time due to cars being taken to wrong departments.

In some service stations workmen are now furnished with all necessary tools, and do not have to own any themselves.

Collapsible crates may be used for the storage of owners' tops. When not in use these crates take up only about one-fifth the room occupied by one of the old style crates.

Everything in the stockroom should be properly filed away and indexed, so that it may be quickly located.

Truck Service Aid.

For a truck service station a small car may be kept for conveying workmen to outside small jobs. When a man telephones in that he cannot move his truck, the mechanics go to the scene in the errand car, instead of using a heavy machine.

When a person brings in a car for repairs, ascertain just how you can notify him when the car is ready. Get the numbers of both his business and residence telephones.

Permit no outsider to go through the building unless he is accompanied by an employee.

A vacuum system of ventilation for departments where there are noxious odors is recommended.

Have the various departments arranged so as to permit proper progression of work without needlessly moving the car around.

Never back a car into the salesroom when a customer is present. Use a turntable, if necessary, to turn it around, so that it may be driven in forward. Backing a car into the room tends to remind the customer of a horse being backed into a stall, and may unjustly prejudice against the car.

Have printed forms to be filled in for every repair job. The foreman receiving the car from the customer should write the order on one of these forms. The order should then be copied on a pasteboard form and attached to the car. Carbon copies should be made for each foreman in whose department work is to be done.

Periodical conferences between representatives of the workmen in the various departments and the department heads develop a good spirit among the employees and minimize labor troubles. At these sessions the employees may present complaints or suggestions. Their advice is often very valuable to the officials.

CAPT. MUNRO JOINS GMC TRUCK FORCE.

Following his release from the army, Capt. Walter J. Munro, well known in advertising circles, has joined the General Motors Truck Co. organization and is connected with the factory at Pontiac, Mich. As military aid and assistant to Brig.-Gen. C. C. Jamieson, chief of production in the Ordnance Department, Capt. Munro was closely associated with ordnance production throughout the country and with the various district offices.

He entered the service in September, 1917, as a private in a field artillery regiment, and two months later was transferred to Washington, where he was commissioned as a first lieutenant, in December, 1917, and assigned as administrative officer under Brig.-Gen. Guy E. Tripp. He received his captaincy in June, 1918, and became aid to Gen. Jamieson.

Capt. Munro was twice recommended for commission as a major and was given this rank in the reserve corps upon his discharge. He was associated with the Green, Fulton, Cunningham Co., advertising agent, before he went into the army. Previous to that he had been associated with the Curtis Publishing Co.

PROVIDENCE WANTS MUNICIPAL GARAGE.

The need of a city garage and repair shop to house and care for the 75 or more automobiles of various sizes and types now being used in the transaction of the city's business is being considered by members of the city government in Providence, R. I. It is believed a municipal garage would result in a big saving for the city.

INCOME OF REPUBLIC RUBBER CORP.

The consolidated income account of the Republic Motor Corporation of Youngstown, O., together with its subsidiaries, after a reduction made for interest charges, shows a total profit for the year ending Aug. 31, 1918, of $906,243. Dividends amounting to $382,249 were paid on preferred stock and $76,164 on common, leaving a surplus of $447,830.

HEADS INDIANA TRACTOR CO.

Alvin H. Smith has resigned as manager of the Indianapolis branch of the Ford Co. to become president of the Indiana Tractor Co.

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New England's Favorite Truck

A Wide Popularity Earned By the Federal —One Firm Has a Fleet of Forty

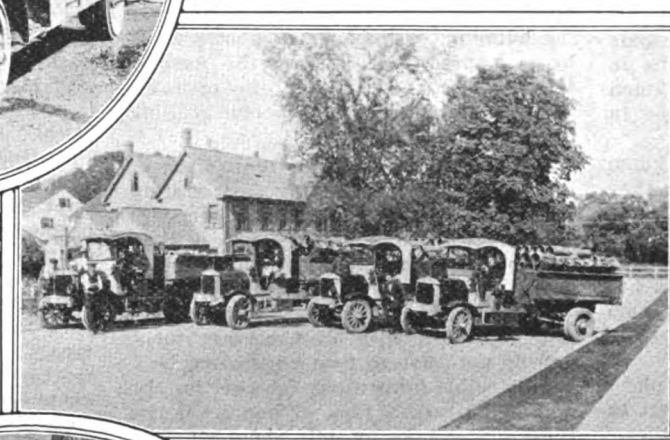
The Annual Motor Show in Boston the latter part of March marks the opening of the tenth year of manufacture for Federal Motor trucks. The unusual reputation which Federals have earned in each of the New England states during these years is made especially significant because the first Federal for the market was sold in Lynn, Massachusetts.

Back in 1910 the first Federal was placed with the National Pop-Corn Company, at Lynn, and it is interesting to note that this truck is still in the company's use, after eight years of steady service, with over 100,000 miles to its credit.

1918 has proved to be a great year in Federal progress all over the east, and its former leadership in the field of motor trucks not only has been maintained, but has been strengthened. Even without the war and its stimulus to all forms of efficient labor saving, there is every indication that Federal would have had its biggest year.



Supplying gasoline stations, Brockton, Mass.

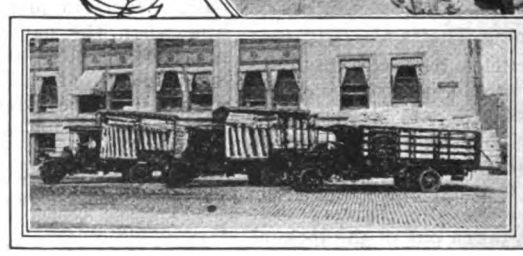




Heavy loads of steel wire for the American Screw Company of Providence, R. I.

Four of the eleven Federals used by Wm. Woods to cut down a hill at Andover, Mass.





Literally hauling away a hill — to make a new street in Andover, Mass.

Heaping loads are the rule for the Merrimac - Rome Co. Federals.

The American Woolen Company is a striking example of the many New England business houses of integrity and long standing that have selected Federals as the logical trucks for their hauling service. This company operates no less than forty Federals at its various branches in Massachusetts, Maine, Vermont, New Hampshire and Rhode Island.

See the Federal line on display at 233 Massachusetts Ave., Cambridge, and then go home and see the Federals operating on the highways and streets and you will realize in a greater sense the completeness with which New England is Federal-ized.

Factory and main offices are located at Detroit, Mich.



FEDERAL

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—Federal Easily the Choice

Some Illustrations of Federal Economy as Shown in Actual Use.

Hundreds of striking cases of Federal efficiency in the service of New England corporations and business men can be listed, but a few illustrations will serve to show the variety and extent of the Federal's usefulness.

At Andover, Mass., William Woods, in order to add a certain street to his estate, consented to give the city a new street. To do this it was necessary to cut down a big hill. A fleet of eleven Federals actually carried away the whole hill. When the job was completed the trucks were turned over to the American Woolen Mills, of which Mr. Woods is president.

The oldest jitney line operators in Boston, the Rawding Auto Bus Line, Inc., are successfully handling with a Federal the entire traffic to Fish Pier, where most of the boats of the Atlantic fisheries land, there being no car line.



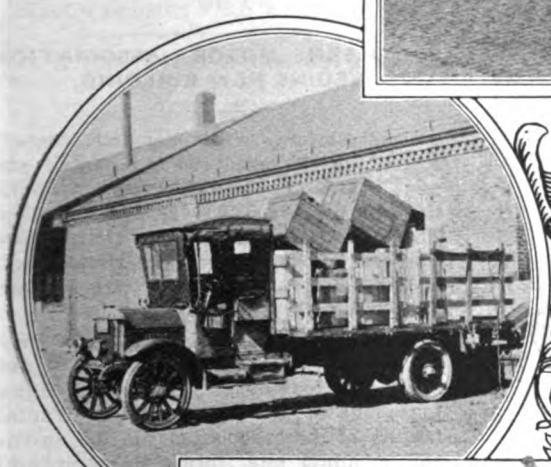
Bad roads, hills or heavy loads do not stop the Federal.



This Federal has greatly enlarged the area covered by Pawtucket Ice Co. deliveries.



A very common type of Federal delivery car all over New England.



On heavy duty for American Enamel Co., Providence, R. I.



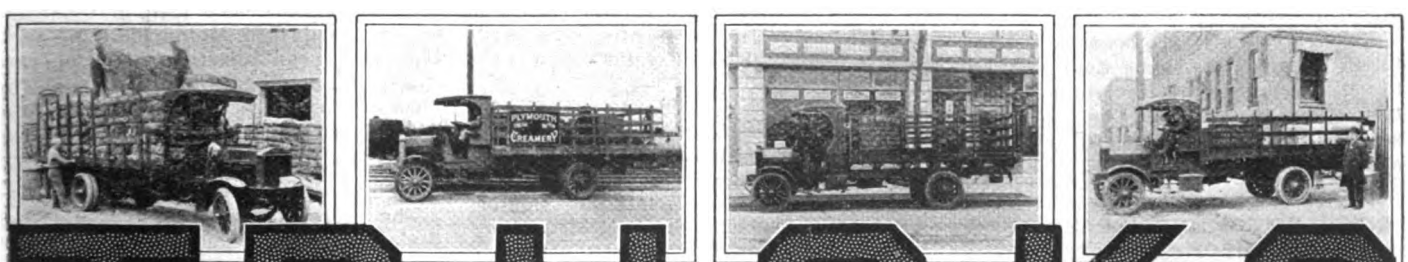
Federal tractor hauling lumber trailer at Cambridge, Mass.

At Hill, N. H., the Emerson and Charles Lumber Co. has been loading its Federal so heavily with green oak logs that it has broken through several bridges, but has had no trouble with the truck.

Traveling 26,000 miles in 30 months, the Federal of Hamblin & Russell Mfg. Co., Worcester, Mass., hauled freight, cord wood and coal for factory use, with a total repair expense of $1.20.

Owners of the Federal motor truck are its best salesmen. The satisfaction which they get in the actual use of their Federals is one of the biggest factors in convincing their friends and business associates that Federals should be their choice also.

Write for "Traffic News," a magazine of haulage facts.



TRUCKS

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PENNYBACKER BECOMES A. A. A. DIRECTOR OF ROADS.

J. E. Pennybacker, chief of management of the Federal Bureau of Public Roads, has resigned to become director of roads for the American Automobile Association. He originated and edited the Good Roads Year Book, and was adviser to the Joint Committee on Federal Aid to Post Roads of the United States Senate and House of Representatives before taking charge of the management branch of the Federal Road Bureau.

"The Federal aid road act is a milestone on the way, but only a milestone," declares Mr. Diehl. "Ultimately there will come a national system of highways correlated with state systems and these in turn with county systems. There will be difficult problems of finance, of administration, and of traffic regulation to be solved. In these questions the 6,000,000 motor vehicle owners should take an active part, for these are questions that must be settled right and in accordance with intelligent public opinion. The A. A. A. Good Roads Board will actively seek to sound the best sentiment on these subjects and to bring to light the best thought in their working out."

FOREIGN EXPORT SHIPPING RATES APPROVED.

The first compilation of foreign export shipping rates approved by the Rate Department, Division of Operations, of the United States Shipping Board quotes rates for agricultural implements, agricultural tractors, auto trucks, engines (in parts of agricultural tractors) and engines (not parts of tractors) from North Atlantic ports to Liverpool, London, Manchester, Hull, Avonmouth, Bristol, Cardiff, Glasgow, Leith and Belfast at $1 per 100 pounds or 50 cents per cubic foot at ship's option.

PNEUMATIC TIRES FOR FIFTH AVENUE 'BUSES.

The Fifth avenue 'buses in New York City are to be equipped with pneumatic tires. The adoption of the new tires, the operating company claims, will completely revolutionize 'bus riding and will make riding on a 'bus more comfortable.

DISTRIBUTES INTERNATIONAL TRUCKS IN MICHIGAN.

Ralph J. Handy has become distributor in Detroit and Wayne County, Mich., for the International Harvester Co., International trucks, and has sales and service quarters at 554-60 Grand River avenue, that city.

CRIPPLED SOLDIERS LEARN AUTO MECHANICS.

Automobile mechanics is among the subjects taught to crippled soldiers at the Municipal School of Re-Education at Nantes, France. The school was organized in November, 1916, and has about 250 students.

TAX FOR MOTOR TRUCKS PLANNED IN QUEBEC.

The Motor Vehicle Act of the Province of Quebec is to be amended to give municipalities power to tax certain commercial motor vehicles and horse drawn vehicles. Charging this tax is optional wih each municipality. Truck owners fear that the authorities may neglect to provide that an owner may be taxed only in one municipality. The tax applies only to those who use trucks for hire, such as cartage, express companies, cab men and common carriers, but not to delivery stores and other concerns that use trucks in connection with their own business.

PAGE JOINS COMMERCE TRUCK SALES ORGANIZATION.

The Canadian territory is now covered for the Commerce Motor Car Co., Detroit, by Robert E. Page, who was for nearly five years assistant foreign sales manager for Dodge Brothers, Detroit. He will supervise the distribution of Commerce trucks, these being rated at 1½ and two tons, maximum capacities. Temporary headquarters has been established in Toronto, but a permanent office will be located later on. Mr. Page made exhaustive investigation of the possibilities of the Canadian market for cars and trucks and prepared a report that was especially comprehensive.



Robert E. Page, New Canadian Representative of the Commerce Motor Car Co.

RURAL MOTOR EXPRESS FOR SCANDINAVIA.

Rural express and inter-city motor lines are now being established in Norway and Sweden. Gasoline is comparatively low in price there, while prices for horses are high.

The Schoof-Gracey Co. has been organized in Detroit to take over the commercial body department of the Maurice W. Fox Co., authorized Ford agent.

GERMAN'S FOREIGN TRADE SHOWN IN STATISTICS.

The Bureau of Foreign and Domestic Commerce has issued for the convenience of the American exporter in one bulletin the statistical details of Germany's foreign trade from 1909 to 1913. These figures show the lines that are open to development by American exporters and answers the questions so frequently asked as to the classes of merchandise that can be marketed in foreign countries.

The most valuable tables are those showing imports with each country by articles. There are also tables showing the total imports and exports, and others that show the trade by principal articles, arranged in the order of their importance. General statistics of population, crops, industries, etc., are included.

The details are gathered from other publications of the bureau and for the first time published is one volume.

Copies can be obtained by sending order with 10 cents (no postage stamps or multilated currency can be accepted) to the Superintendent of Documents, Government Printing Office, Washington, D. C. The official name of the publication is "Statistics of German Trade," Miscellaneous Series No. 75.

SOUTHERN MOTOR ASSOCIATION BEGINS NEW BUILDING.

Construction will be immediately started on the proposed building of the Southern Motor Manufacturing Association, to cost $100,000, in Houston, Tex. The association is engaged in making tractors, trucks, automobiles, trailers and bodies. The present factories are at Bowling Green, O.

The plant of the Waco Motor Truck Co., recently purchased, will be transferred to Houston as soon as the Houston plant is in operation. The tractor factory of the association, located on the ship channel site, forms the first unit of the new building. The tractor factory, assembling plant and the body and trailer factory are already in operation in Houston. J. E. Blevins is president of the association.

CHARTER FOR $5,000,000 MOTOR BUS COMPANY.

A charter has been filed in Delaware for the Boulevard Motor Bus Co., with $5,000,000 capitalization, to operate stages and omnibuses for public use. The incorporators are Arthur W. Britton, Samuel B. Howard and Paul S. Smith, New York.

The Pierce-Arrow Motor Car Co. has declared its usual quarterly dividend of $1.25 a share on common stock, payable to stock of record Jan. 15.

A building permit has been issued in Detroit for the Packard Motor Car Co. to erect a one-story storage shed to cost $30,000.

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TRAILER MANUFACTURERS REORGANIZED.

Twelve of the leading trailer manufacturers were represented at a reorganization meeting of the Trailer Manufacturers' Association of America in Cincinnati. The association will encourage the introduction and use of trailers, further the construction of good roads, aid in the enactment of suitable traffic laws, obtain and distribute information for the use and benefit of its members and otherwise aid in the general advancement of the trailer industry and of trailer dealers.

Among the subjects discussed were advertising, publicity, sales policies, financing, freight classification, standardization, legislation and good roads.

The serious interest of all those in attendance was taken as an indication of the great good to be accomplished through the association. Officers were elected as follows: President, W. E. Ferris, the Ohio Trailer Co.; first vice president, W. A. Murfey, King Trailer Co.; second vice president, R. C. Sykes, the Troy Wagon Works Co.; secretary-treasurer, J. C. Endebrook, the Trailmobile Co.

The following were elected additional members of the executive committee: W. R. Bond, Detroit Trailer Co.; W. F. Jolley, the Miami Trailer Co.; C. H. Martin, Martin Rocking Fifth Wheel Co.

FORD & SON STOP WORK ON TRACTOR TANKS.

The plant of Henry Ford & Son, Dearborn, Mich., which has a contract to build thousands of small war "tanks" for the United States War Department, is now being made ready for the production of Fordson tractors, work on the contract being suspended. How far production had advanced on the contract is not known generally, but the plan was for these machines to be turned in very large numbers and as rapidly as was possible. As soon as material can be obtained for Fordson tractors the manufacture of these machines will be resumed, and statement is made that the purpose is to bring the output up to an average of 200 a day.

RACINE RUBBER CO. MARKETS NEW DEVICE.

The Racine Rubber Co. has marketed a new device perfected in its laboratories called the absorbing shock strip. It is an extra strip of rubber compounded to a graduated degree of resiliency, and through this strip the tough rubber tread and the resilient cord carcass are welded together into a rugged, wear-resisting whole.

SELLS MASTER TRUCKS.

Louis Bowser, Lafayette, Ind., heads a company that will handle Master trucks in Indiana. The branch has an office at 431 North Capitol avenue.

E. H. Beltzig has become manager of the St. Louis branch of the Sewell Cushion Wheel Co., Detroit, succeeding George F. Willis.

Parcel Post Service By Trucks Is Cut 75 Per Cent.

Provisions of the new postoffice appropriation bill discontinue three-fourths of the motor vehicle routes now in operation for carrying mail through country districts. This service was established as an experiment, it being hoped that the service would prove of value in reducing the cost of living.

The Postoffice Department strongly advocated this proportion, asking for an appropriation of $1,000,000 for this service the coming year. The recommendation was in conflict with the judgment of a committee of nine postoffice inspectors who recently investigated the subject. This committee reported that only a few of the motor truck routes had developed such service and utility as to warrant their continuance.

The committee concluded that the rates were not low enough to be a large factor in the distribution of food, in view of the exacting requirements as to packing and wrapping, the insurance and collection charges, etc. It advised that the experiment of such collections and deliveries be continued on a limited scale, and the conference committee of the two houses has adopted this policy.

It is evident that further careful study must be given to the parcel post before it is able to succeed.

FISK RUBBER CO. EARNINGS.

The net income of Fisk Rubber, after depreciation charges, was $3,600,000 in 1918, approximately the same as in 1917. The earning per common share was about $20.

THE QUIETERION.

The Quieterion, the monthly publication of the Hyatt Roller Bearing Co., has an "American Ace" number which is very interesting. An account of the Rickenbacker banquet in New York is given.

WHITE TRUCKS CARRY FOOD INTO JERUSALEM.

Starving inhabitants of Jerusalem, victims of Turkish lust and brutality, were immensely cheered when White motor trucks came laden with supplies and food for them. The accompanying photograph shows a five-ton White truck making its first entrance into Jerusalem through a breach in the walls at the Jaffa gate.

The truck is loaded with cotton for mattresses and beans brought from Egypt for the orphanages. Without these powerful trucks for transport work death and suffering would have been greater. Before the advent of the trucks practically all of the transporting was done on men's backs and by donkeys.

The American Committee for Relief in the Near East used many of these trucks in rushing food and supplies to the destitute and starving people. This committee, with characteristic American spirit for giving succor to the oppressed, has fed thousands of these unfortunate refugees and saved them from starvation.

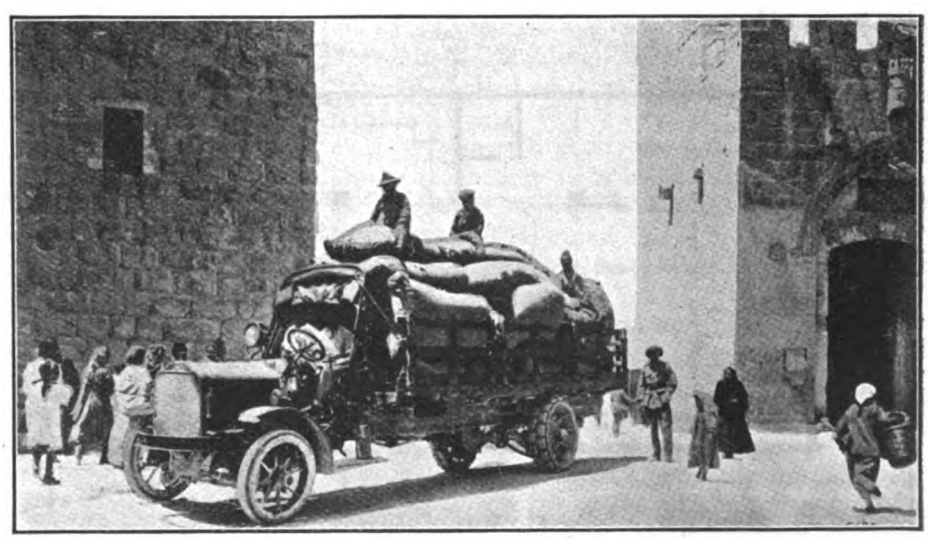
There was only one source of help and that was America. And America did not hesitate. The big trucks caused a wonderful sensation when they arrived in Jerusalem and the inhabitants marveled more than ever at American industry.

TO HANDLE TRAILMOBILE.

The Frank Hatfield Co., 335 North Capitol avenue, Indianapolis, will distribute Trailmobile trailers in Marion county, Indiana. This trailer, made by the Trailmobile Co., Cincinnati, is furnished in any capacity from 1250 pounds to 3½ tons and can be fitted with any type of body.

REPUBLIC TRUCKS IN JAPAN.

Republic trucks have been in use in Japan for several years. The first shipment there was for the postal service. They are now used by many of the government departments.

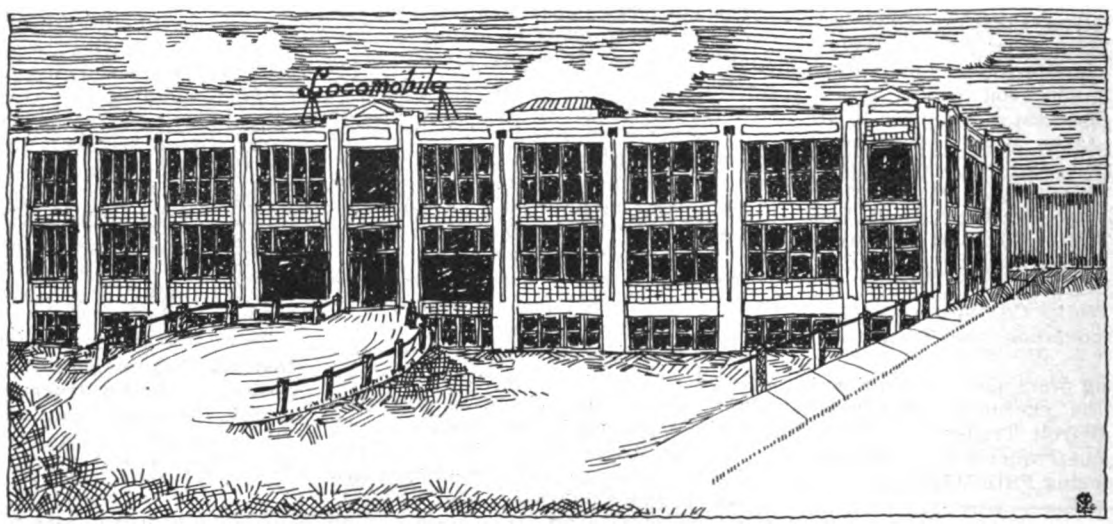


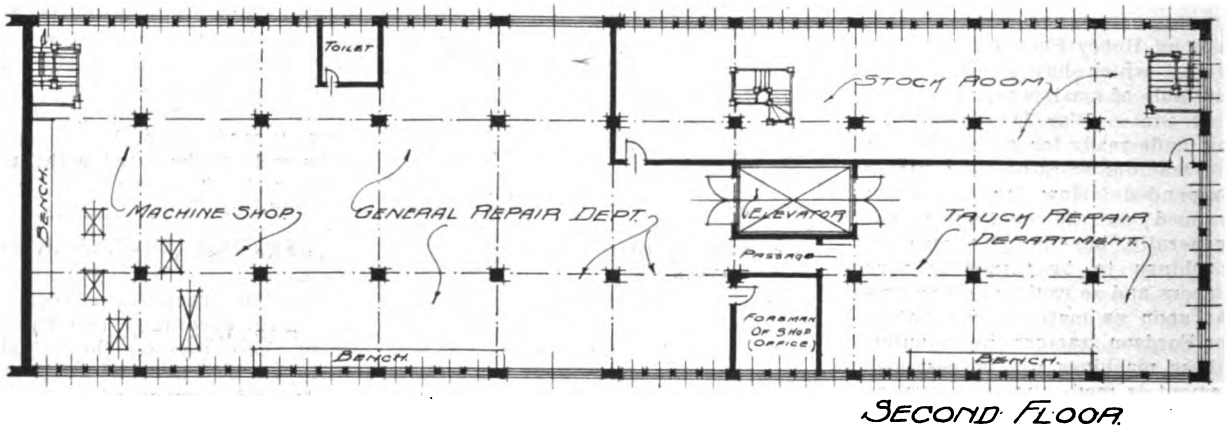
White Five-Ton Truck, Laden with Cotton and Beans for Hungered Orphans, Entering Jerusalem Through a Breach in the Wall at the Famed Jaffa Gate.

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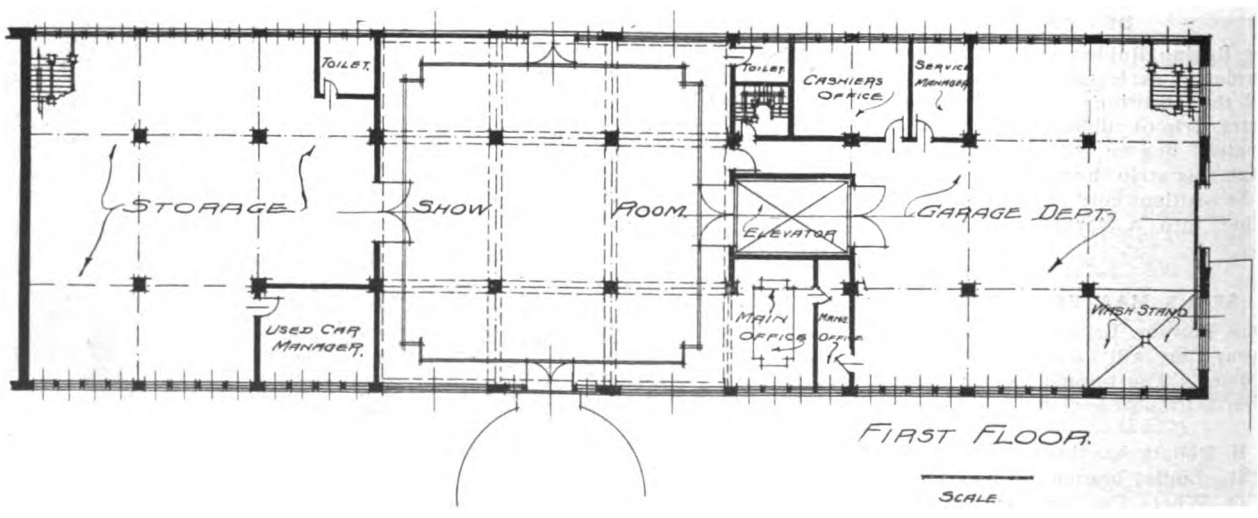
PLATE XIX

Locomobile Service.





SECOND FLOOR.



FIRST FLOOR.

SCALE

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BRANCH EQUALS WORK OF FACTORY

Boston Station, Serving Great Part of New England, Has Every Facility for Sales, Repairs and Storage.

SERVICE of the most exacting sort is to be had at the service and sales station of the Locomobile Company of America, at 700 Commonwealth avenue, Boston. The station is a two-story structure with basement, covering about 36,000 square feet. The rooms are so laid out as to permit efficient and economical service.

The front of the building is very pleasing to the eye. The structure lies back a considerable distance from the avenue, and has spacious lawns that add to its beauty. The construction is of reinforced concrete, with concrete and brick trimmings and metal sashes.

A wide driveway, built somewhat in a horseshoe shape, leads from the avenue to the sales room, which is located in the middle of the building. The office lies between the garage and the used car department.

The number of cars on display in the sales room is usually six. In the center of the room is a square covered by a rug, on which there are a table for advertising literature and two or three chairs. If it is desired to give special display to some car, the rug, table and chairs are removed, and the car placed in the square.

In the used car room there is comfortable space for 25 cars. There is an entrance to this room for machines from the street at the rear of the building. Double doors separate the room from the sales room. When a car is to be taken into the sales room to be shown to a customer, it is never backed in. Instead, it is turned around on a two-wheel turntable and driven in. The car might easily be backed into the sales room, but the management believes such a practise might remind the customer of a horse being backed into a stall and thereby subconsciously prejudice him unjustly against the machine. The main office leads from the sales room.

Entrance to the garage is from the side street. The office for the service manager and a cashier's office lead from the garage. When an owner or agent drives a car into the garage for repairs, the foreman fills out a form on which he states what repairs are to be made. This form contains information as to the model of the car, the number, name, address and telephone numbers, business and residence of the owner or agent, the date, number of the shop order and approximate delivery date.

At the top of the form appears the following: "Make necessary repairs and additions as listed below." After the instructions are filled in the owner or agent signs the form.

Four copies of the form are then typewritten and distributed to the repair men who will have charge of the work to be done. A pasteboard card, known as the "Shop Work Card," is also filled in and attached to the car. Repair men write their numbers besides the directions intended for them, to show that they have completed their work. When the job is done the head foreman examines it and, if it is satisfactory, he signs the card and sends it to the office. The owner or agent is then notified that the car is ready.

The car, upon arriving at the garage, is taken on the elevator to the second floor, most of which is one large room devoted to repair work. The stock room is also located on this floor. The repair shop is a branch of the Locomobile factory, and contains all of the modern machinery needed for repairing or thoroughly overhauling cars and trucks. Fifteen men are employed here in the winter, and many more in the busy season. There is ample room for working on 25 cars at one time.

Passenger cars are repaired on that part of the floor that is over the used car department, while motor trucks are handled at the other end of the room. The stock room is kept well stocked with all parts for which there may be calls. There is a small office in the repair shop for the foreman.

The machine shop is located in a corner of the general repair department, so that the machinery is handy for all repair work.

The finishing room is located in the basement. A large part of the basement is also given over for storage purposes. Winter cars are stored here during the summer, and summer cars during the winter.

In addition to the front entrance there is an entrance to the sales room from the street in the rear of the building.

John J. Donovan makes a splendid superintendent for the building. The mechanics employed are all skilled workers on Locomobile cars or trucks.

Being a factory branch, the repair departments are equipped so as to be enabled to handle any job, no matter how big it may be. In fact, it is believed an entirely new car could be built right in the branch. The mechanics know a Locomobile from beginning to end and they are able to do their work quickly and economically.

Throughout the station the arrangement is systematic and permits proper progression of work with the least possible delay. In the repair departments the same standard of efficiency is required as in the main factory, and there is adequate supervision of the work of the mechanics to insure its being well done.

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SERVES DEALERS AND BUYERS

Ideal Plant at Boston Designed as Headquarters for the New England Distributor of Peerless Cars and Trucks and for the Retail Sales of Machines and Local Service.

ONE of the largest and most complete retail automobile sales and service stations in the world is that of the Beacon Motor Car Co., agent for Peerless trucks and cars, at 660 Beacon street, Boston, Mass. With 70,000 square feet of floor space, all departments are under one roof in this six-story structure with basement. The plant contains every mechanical and craftsman shop needed, and every repair necessary to a Peerless truck car, no matter what the degree of restoration required, can be made in the building.

Since the company began its occupancy, about eight years ago, the building has been accepted as a model for the best service stations, but it now has many marked improvements that it formerly lacked. The Beacon Motor Car Co., New England distributor for Peerless machines, acting upon directions from the fire commissioner, about three years ago, found it necessary to make a number of somewhat extensive changes in the building. This occasion was taken advantage of by transfers of numerous departments from one floor to another, so that they might be coordinated, and the incorporation of many features, the need of which had not been realized when the building was erected.

As now arranged the building possesses practically every improvement and convenience that may be found in the ideal service station. The equipment throughout is remarkably complete. With the best machinery in repair, blacksmith, paint, wood and upholstery shops, the workmen make repairs in minimum time for such work.

Sales Room and Garage.

In the front of the street floor, on the Commonwealth avenue side, is the salesroom, where 10 to 12 cars may be comfortably displayed. There are small desks for members of the sales department staff. In a corner of the room is a cabinet containing trophies won by Peerless cars.

Large double doors, through which cars may be driven, connect the sales room with the general garage, entrance to which is through a doorway on the side street.

A passenger elevator, operated by a girl, runs from the basement to the top floor in the front of the building, with an entrance from the sales room. This is a convenient way to reach the general office, on the second floor, directly over part of the sales room.

The capacity of the general garage is 30 cars. Near the entrance is a small office for the garage stenographer and clerk. Two large elevators, one for trucks and the other for passenger cars, are at the rear of the garage, and these run from the basement to the sixth floor. The truck elevator may be used not only for trucks, but also for passenger cars when the other elevator is busy, but no trucks are permitted on the passenger car elevator.

Occupying a large corner of the front of the second floor is the general office. The remainder of this floor is devoted to the storage of new cars and trucks and to the making of adjustments and light repairs on them. The general office formerly occupied the whole of the front of this floor, but it was found that it took up much more room than necessary. The change in the floor plan provides considerable extra room for the new cars.

This floor has a capacity of about 30 trucks and cars, and during the busy season it is usually well filled up, sometimes shipments of 18 or 20 cars being received at once. Both passenger cars and trucks are displayed here.

Blacksmith Shop.

The blacksmith and tinshop comprises most of the third floor. The blacksmith department is especially elaborate for a service station, and has all up-to-date machinery and tools. Wrecks and big frame jobs are handled here. All of the spring work is also done. Trucks and passenger cars that come to the service station in a bad condition are entirely restored. Welding work is done with the exception of the aluminum welding. Truck frames are reinforced and made stronger than ever. Radiators are repaired and tested under pressure. Work on the fenders is also done here.

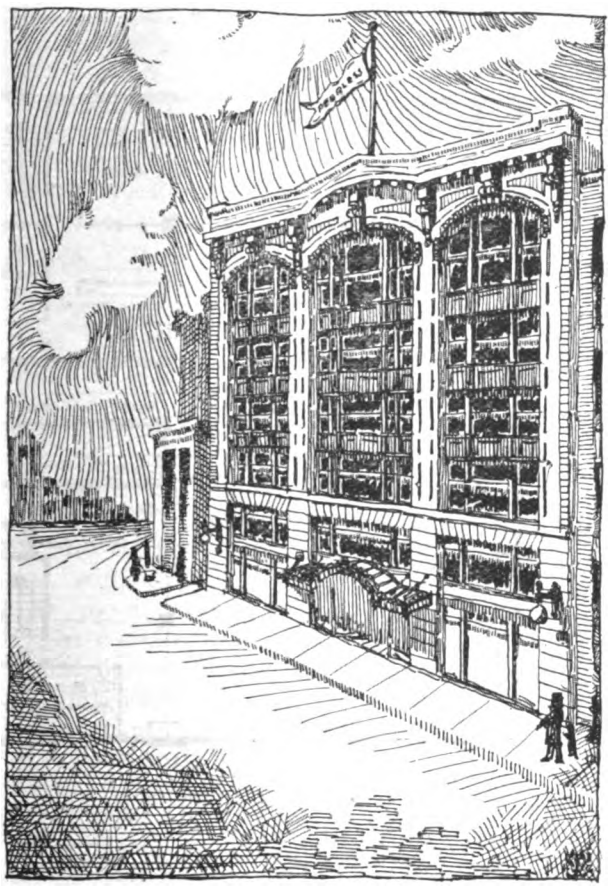
Under the fire commissioner's regulations fires are permitted on only one floor and in this case they are all on the third floor.

Separated by a wire wall, the superintendent's office and stock room are located at the front of this floor. In the superintendent's office is a key cabinet containing a duplicate of every key for any lock in the building. Records are kept of all of the former employees, with notations as to their work and the reasons they left.

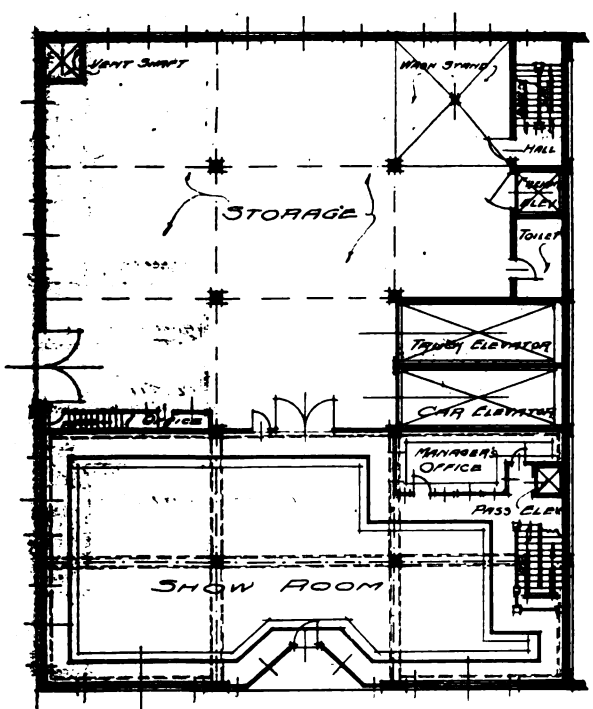
In the storage room are kept all parts for five years back and also a few of the parts used seven or eight years back. Thousands of dollars worth of parts are stored here.

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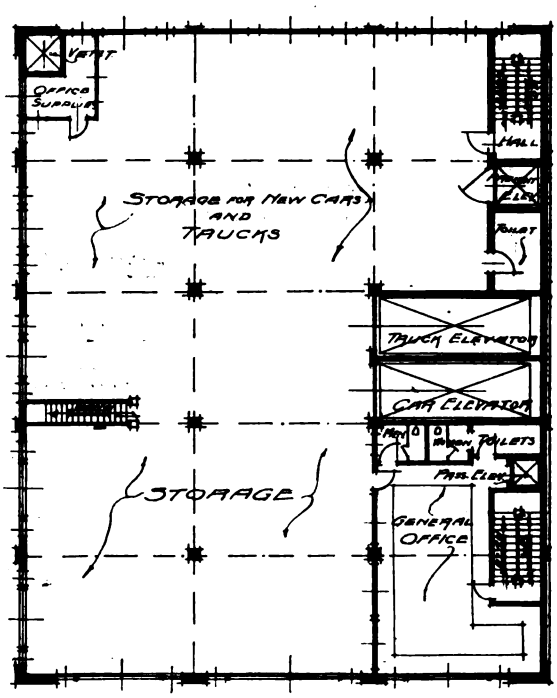
PLATE XXVIII







FIRST FLOOR

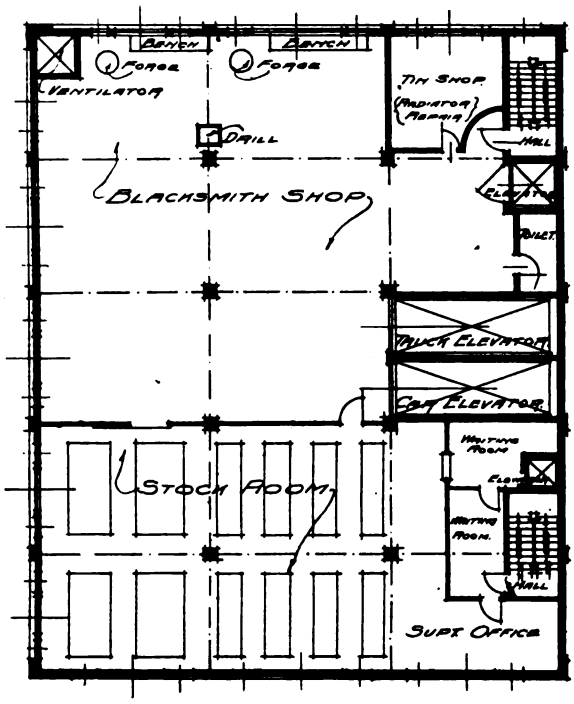


SECOND FLOOR

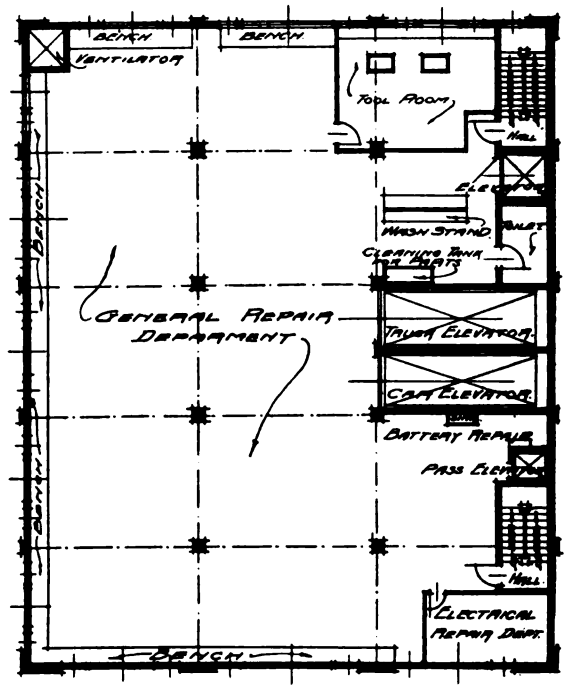
SCALE.

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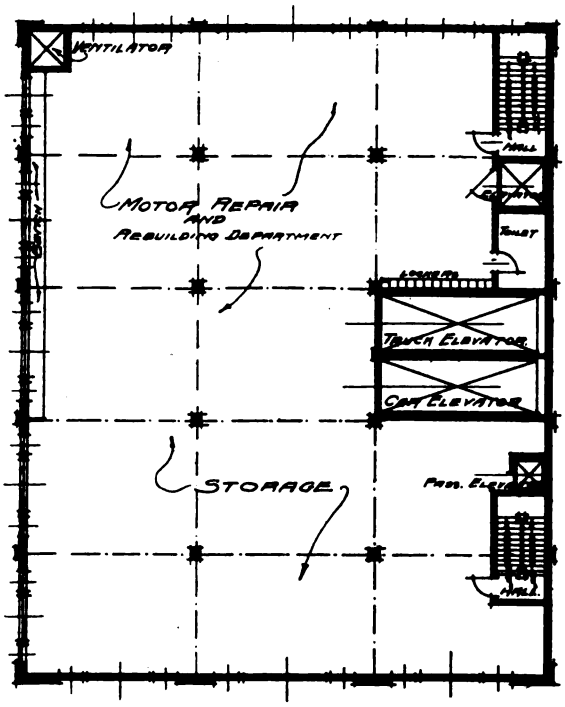
PLATE XXVIII-A



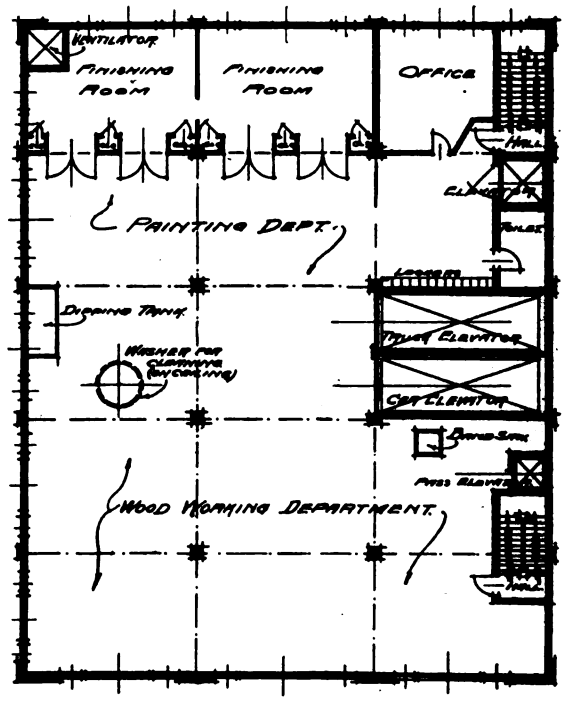
THIRD FLOOR.



FOURTH FLOOR.



FIFTH FLOOR.



SIXTH FLOOR.

SCALE.

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The drawers containing the various parts are properly labeled and there are plain markings on everything in the room. There are thousands of piston rings for all models. Heavy truck articles too big to go into the drawers, such as spare wheels, truck chains, mud guards, radiators, tires, etc., are located in the rear of the store room. All models of springs are kept in spring racks.

Electric Rooms.

In a corner of the front of the fourth floor is located the electric rooms. These are elaborately furnished, the equipment being unusually complete. Five hundred batteries may be charged at a time. Considerable work was done here when electric vehicles were charged in this department.

The building is located just inside of the direct current zone. Any battery can be charged or discharged. There is an improved test board. All magnetos of every make may be overhauled.

Near the electric rooms is a lead lined sink for acids, with a box for separators beneath it. There is room for the storage of old battery plates. There are hydrogen and oxygen tanks for lead burning. New batteries are carried in stock. The charging board, which was so necessary with the electric vehicles, is still intact.

The remainder of this floor is devoted mostly to all general repairing and overhauling work. In one corner is a large tool room. The workmen are furnished with the ordinary hand tools and special wrenches, etc. None of the workmen are permitted to go into the tool room, but are handed what they need at one of the windows. A wire wall surrounds the tool room. Oils are kept in the tool room, and are given out only when orders are presented.

Near the tool room are cleaning tanks for greasy parts. Water and kerosene are used.

For valve grinding there is an electric grinder and also four hand grinders that come in very handy. The employees have rigged a grinder with a heavy stone on it, and this grinds clutches in half the time and does a better job than under the old method employed.

An important feature on the third floor is a vacuum piping system that carries out all of the exhaust gases, the pipes leading to the flue being attached to the mufflers. This is a big improvement on the method of forced fan ventilation.

Every convenience possible for the workmen may be found on this floor. Motors are taken out of the frame and put on special stands. The parts are put on another stand, which has three sections to it.

Used Cars Floor.

All used cars are handled on the fifth floor. Peerless cars only are rebuilt here. Every part of a car is gone over with thoroughness and the rebuilt car is sold under guarantee. This floor was used for the blacksmith and tinsmith rooms four or five years ago, but since the eight-cylinder cars came it was found that more room was needed for the used cars. Owners of the old $5000 cars used to hang onto them, but now many turn in their cars every year and get new ones.

The repair shop can take care of any wreck. Three or four wrecking trucks are always ready to go to the scene of an accident and if a car is very badly smashed a truck stripped down is sent to bring it to the station.

The front of the fifth floor is occupied by rebuilt cars ready for sale. The car must be in perfect condition in every respect before it is offered for sale. For instance, if the top was torn a new top is installed. All of the cars are tuned, washed and given a final test before sold. Motors are overhauled and everything has to be in tip-top condition.

Finish work is done on the sixth floor. A large space in the center of the floor is reserved for assembling. In the rear are located the varnishing and drying rooms. The wash room is on this floor. In one of the corners is space for six cars for trim work and the repairing of upholstery. There are 100 watt lamps with big reflectors for night work. However, only rough work is done at night, all of the fine work being left for daylight.

On this floor is a big potash dipping tank fed by live steam. Some paint work is done on cars other than Peerless, but all other work is limited to Peerless cars. Until three years ago the woodworking and blacksmith shops were together on the fifth floor, but it was decided to consolidate the paint and trimming departments because of the vast amount of repair work that is done.

Shipping Room.

The rear of the basement is used for the shipping room and storage. Losses of articles being shipped in or out of the building have been practically obviated as the result of the system in the shipping room. Everything coming in or out of the building has to be checked and proper records of it made by the shipping clerk.

Only the heaviest articles cannot be taken through the door leading from the street in the rear of the structure directly into the shipping room. These heavy articles, such as truck wheels, are taken through the main entrance and to the elevator. While on the elevator they are carefully examined and checked.

There used to be much time wasted by having men or boys carry messages, orders, etc., between the main office, on the second floor, and the shipping room. This has been ended by the installation of pneumatic tubes, through which all of these communications are transmitted.

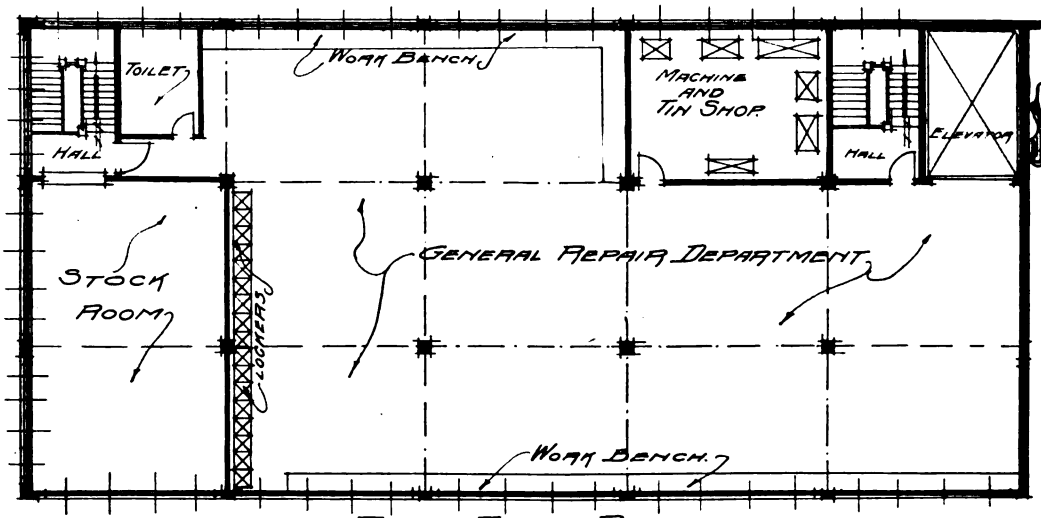
Along one of the walls of the basement are lockers, numbered one to 90, in which are kept all the movable articles taken from cars brought into the service station for repairs.

The basement in the front of the building is used for storage.

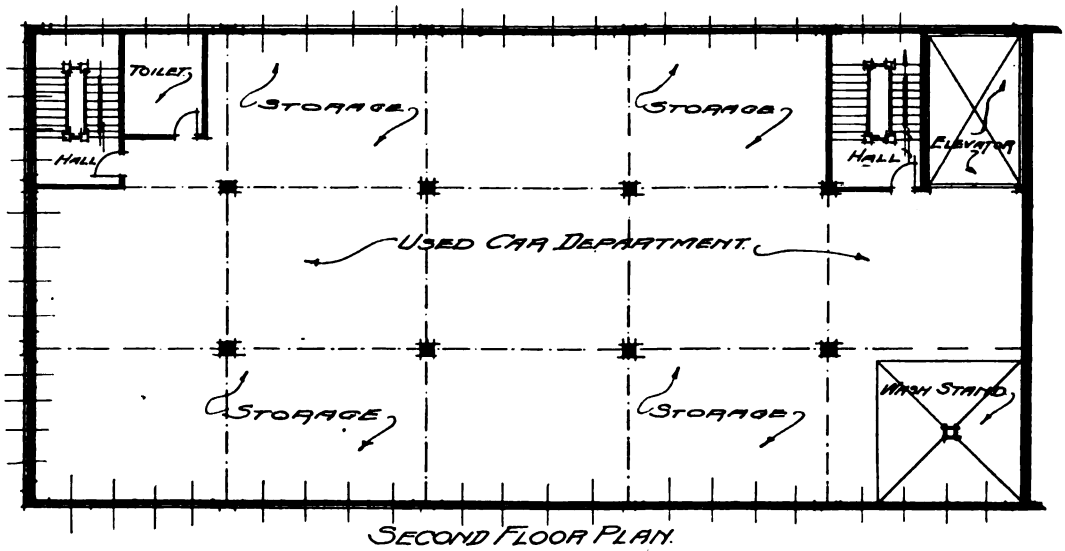
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STUDEBAKER SERVICE

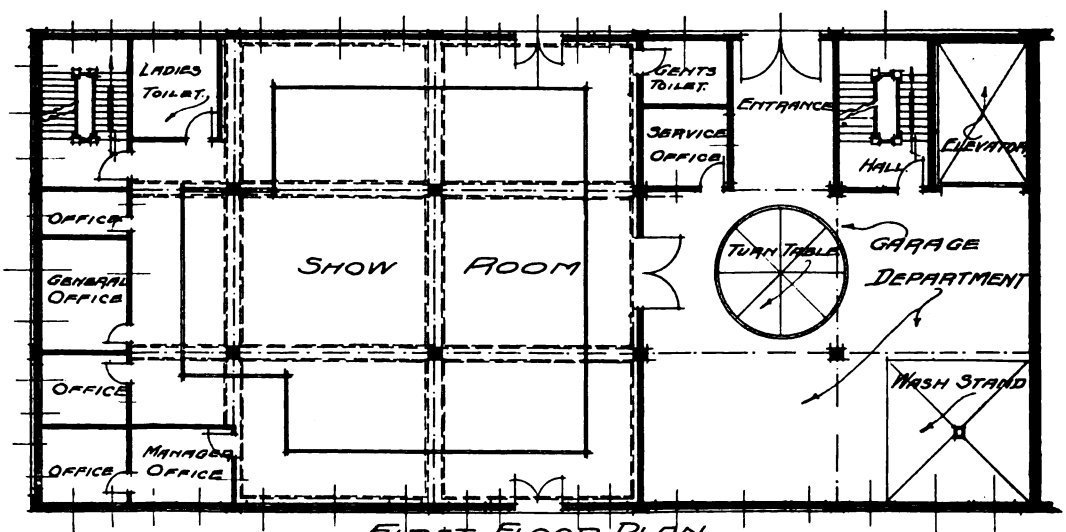
PLATE XXXI.



THIRD FLOOR PLAN.



SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

SCALE.

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DONOVAN MOTOR CAR CO.'S STATION

Plant of the Boston Distributor, Admirably Equipped and Arranged, Will Shortly Be Largely Increased.

THE Donovan Motor Car Co., distributor for the Studebaker car and Sanford truck, has a modern sales room and service department on Commonwealth avenue, Boston. At one time the company maintained a small sales room in the retail business district, where the rent was very high, despite the fact that only a very few cars could be displayed in the store. The company also had to hire a part of another building for its repair work.

The management concluded that it would be more economical and practical to lease a big building some distance from the retail district, where the rent would be more reasonable, and have the sales department and service division together. So it moved out to the Commonwealth avenue structure, where at that time but a few dealers were located.

Never has the company regretted this move, for its business has grown wonderfully since the change was made. In fact, the growth has been so great that it was found necessary to erect a new building, which will be occupied some time this year. The new building is on Cummington street, directly at the rear of the present structure. It will be used for all repair work for which charges are made. The sales room will be continued in the present building and all minor adjustments, tuning, etc., where no charge is made for the service, will be kept here.

The layout of the present structure has proven satisfactory for the service department work, but the floor space is not large enough to handle all the business.

The sales room has entrances from Commonwealth avenue and also from the street at the rear of the building. There is an artistic horseshoe shaped driveway in front. The sales room has about six cars on display. The room is kept bright and pleasing and potted palms add to its pleasantness. A new model engine is displayed in the center of the floor.

Double doors connect the sales room with the garage, which has an entrance from a side street. There is a turntable in the garage, so that cars may be turned around if necessary when they are to be taken into the sales room. A service office is located here and there is a washstand. The gas tank is on a stand outside the entrance, and the oil pump is inside the garage. Salesmen's cars are kept in the garage. There is an elevator big enough for both trucks and passenger cars.

In the basement new car adjustments are made and tuning up done. New cars and demonstrator cars are stored here. There is a small room partitioned off for the storage of new car parts.

All employees enter the rear door, near which there is a time clock.

The second floor is devoted to the display of used cars. From 40 to 50 cars may be shown without crowding. There is a washstand on this floor. No repairing is done here, it being a rule of the company not to have any repairing done in rooms where customers come. There is a desk for the used cars manager.

The machine shop is on the third floor. It is so well equipped that any repair work, including welding, can be done. In fact, the equipment is so complete that it would probably be possible to build an entirely new car. There are work benches along the sides of the shop, which is wired off from the remainder of the floor space.

In the rear are offices for the service department and clerical workers. There is a small room for customers, with a counter in front of the stock room. A good filing system in the stock room eliminates unnecessary delay in locating any part that may be wanted.

Among the devices patented by the company and used in the repair department, is a block stand to which the base of a motor may be fastened. There are holes for the cylinders to fit. A motor on this block may be turned about in any direction, so that the work on it may be simplified because of its accessibility. A motor can be started up and run while on the block.

There are about 7200 square feet of floor space to each floor.

Only expert mechanics are employed, as the company insists that every work must be done so as to give complete satisfaction to the customers. Every car is put through a thorough test before it is turned over to the owner.

That the service given by the company in this plant has been a big factor in its large increase in business is not to be doubted. It was this increase that made necessary the acquisition of the new building.

With the new structure, and the facilities of the present plant, the Donovan Motor Car Co. will afford a service that will be superior to that of all save the largest stations.

The completeness of the equipment of the establishment demonstrates the necessity of providing for every kind of repair work. Facilities have been provided so that every job, from the smallest to the largest, may be done in the quickest time possible, with the guarantee of both efficiency and economy.

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WORLD'S LARGEST AUTO AGENCY

Station of Packard Motor Car Co., of Boston, Which Concern Operates Branches at Providence, Worcester and Other New England Cities, Has Floor Area of Six Acres.

THE Packard motor truck and passenger car service station in Commonwealth avenue, Boston, is very elaborate and remarkably well equipped. Efficiency is the keynote of every department and the general system is such that the most satisfactory results are obtained.

Occupying a four-story building, the plant has a floor space of six acres. There are three wings, with a court yard between them. Every facility is provided for getting out the work quickly, economically and satisfactorily.

Although each department is conducted independent of the others, there is cooperation between every branch of the plant. The company strives to keep the employees contented and is always ready and willing to aid any project for their welfare.

The main stock room is located on the second floor, but it is seldom that workmen have to send outside of their own sub-stock room for anything they require. This system saves much time, as it prevents delay on a job because of lack of stock.

The various departments on a floor are separated from one another by large double doors. Each department has an entrance to passenger and vehicle elevators. Bell signals are used to call anyone who is wanted. When a man hears his signal he goes to the nearest telephone, several of which are located in each department, and the operator connects him with the party calling. The signals sound all over the building, so that a man may be located instantly no matter where he may be.

To do away with disputes with customers regarding charges, an estimate of the cost of a repair job is given when the car is brought to the service station. There is an office in the truck service department and another in the passenger service division, where the probable costs of the work are figured.

All vehicles enter the court way. There are vehicle doors for each of the wings. The automobile truck service department is located in the wing at the rear of the court. On the first floor of this wing only hurry-up jobs—work that usually requires no more than three days to finish —are done. The heavy jobs, such as welding and overhauling, are done on the fourth floor.

The construction of the plant is such that there is as much glass work as possible along the sides of the building, admitting plenty of daylight. The layout, with every department having windows facing the court yard, yields splendid light. On the fourth floor daylight enters from skylights.

All movable articles are taken from a car that is brought into the service station. A list is made and they are then stored in a metal locker until the car is ready to be returned to the owner.

Just inside the entrance to the truck service department, on the first floor, is an office for the department. In one corner of the wing is a substock room, which is convenient for the mechanics. There is room for more than 35 trucks to be worked on at one time without congestion. There is about 12,000 square feet of floor space.

A liberal part of the floor space is given over to the wood working department. In each bay, near the windows, is a small individual working bench, and a truck may be run up close to this.

An automobile is kept for cases where small jobs, such as fixing a magneto or carburetor, are to be done outdoors. If a truck driver has some such trouble with his machine he telephones to the service station and workmen are sent to make an emergency repair.

The machine shop, which is partly walled off from the remainder of the floor, is especially well equipped.

The front of the easterly wing on the first floor is given over to Dodge cars, and the rear to the display of used Packard and Dodge cars.

In the front of the westerly wing, fronting on Commonwealth avenue, is the Packard sales room, which is a bright and cheery place. About six cars are displayed. A patriotic aspect is given by the display of flags. In the center of the room is a standard Liberty aviation motor.

Double doors lead from the sales room into the general garage. Fronting on the court way, with entrance from the garage, are offices for the superintendent, technical department, accessories department, and nearby, although not fronting on the court yard, is a room for the salesmen.

There is a large entrance for motor vehicles leading from the court way. At the door is an office of the service department, where orders are recorded and other business transacted.

In the rear of the garage and part of the same room, is the test department. Tool and oil rooms are located here.

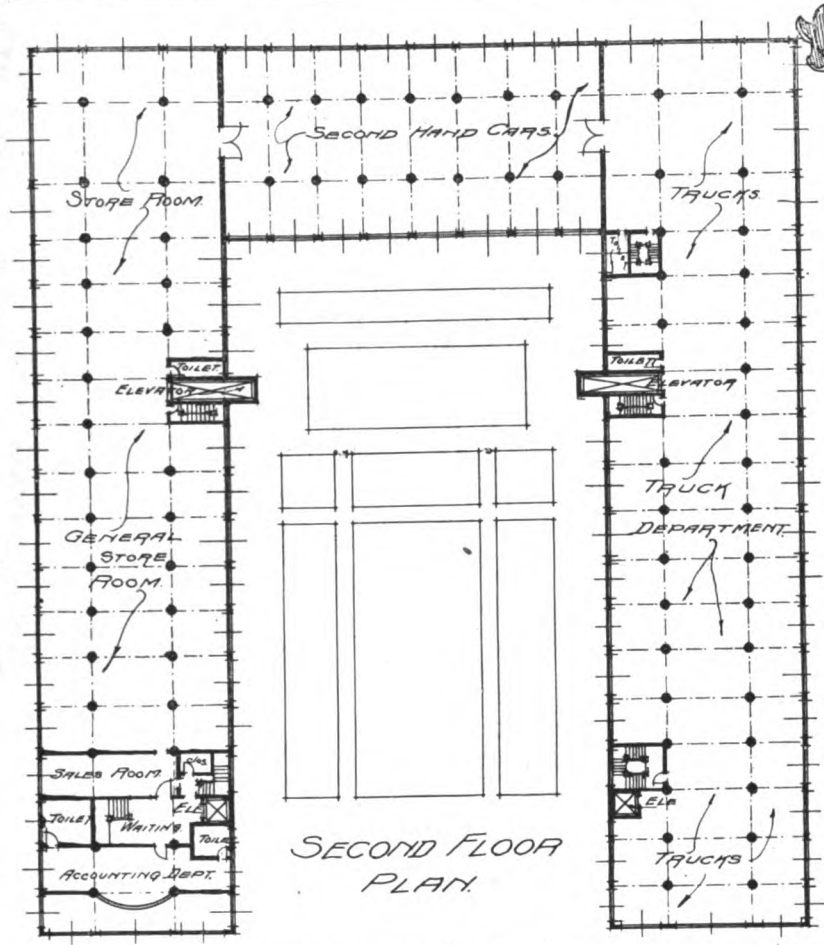
In the front of the second floor, directly over the sales room, is a large balcony, which is devoted to the accounting department. There is

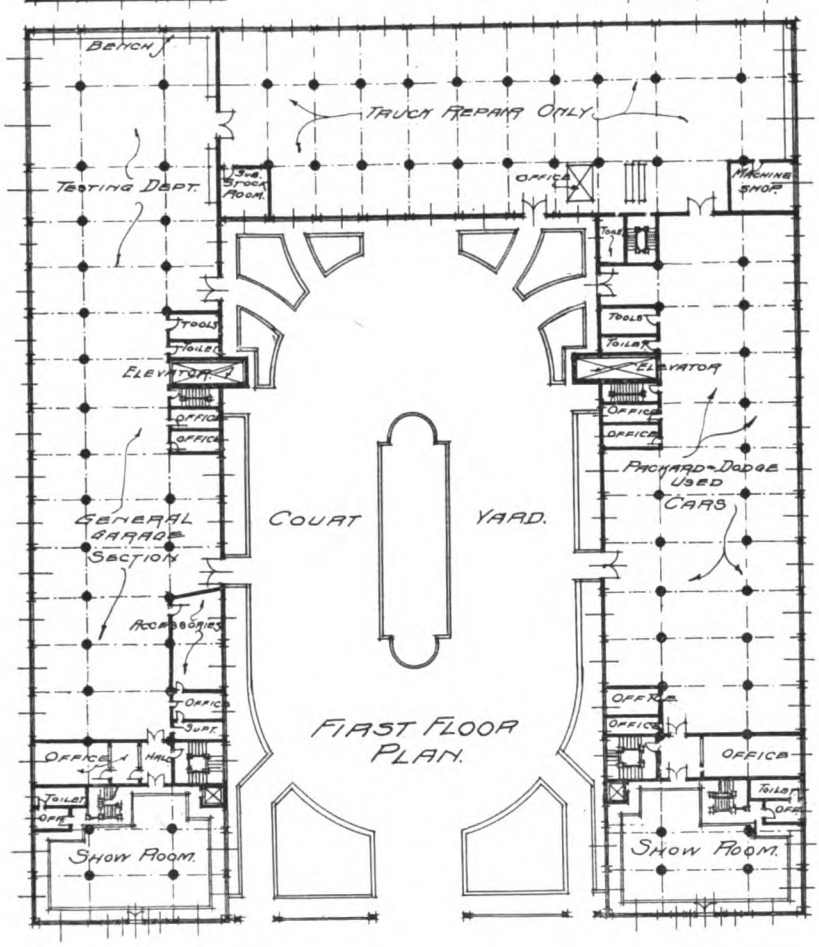
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PLATE XXX.

PACKARD

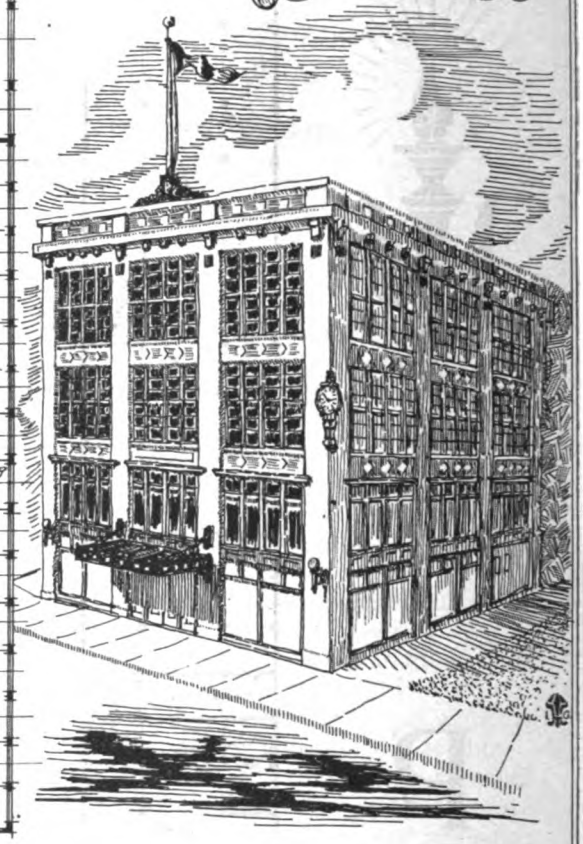
SERVICE

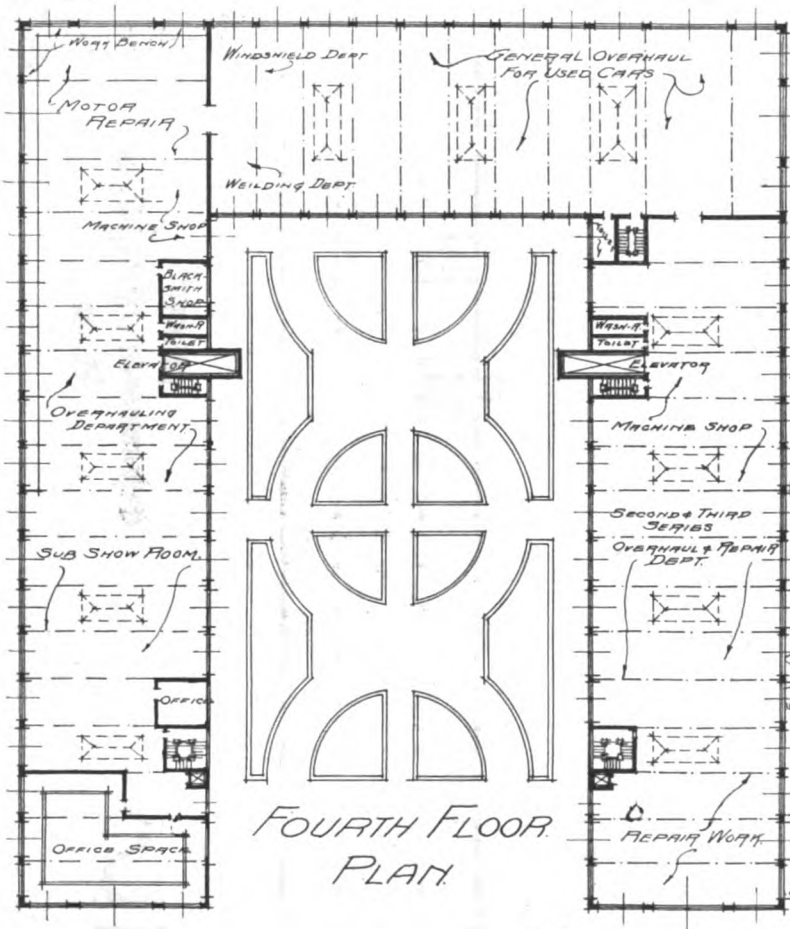




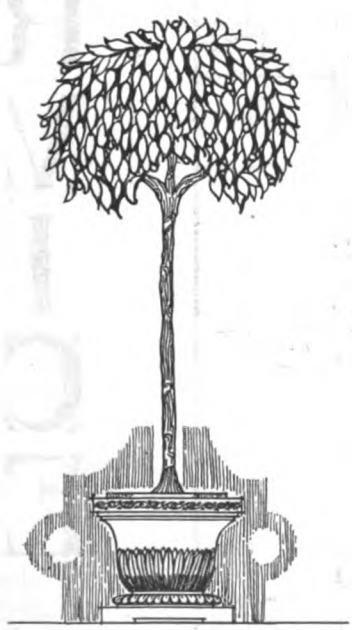
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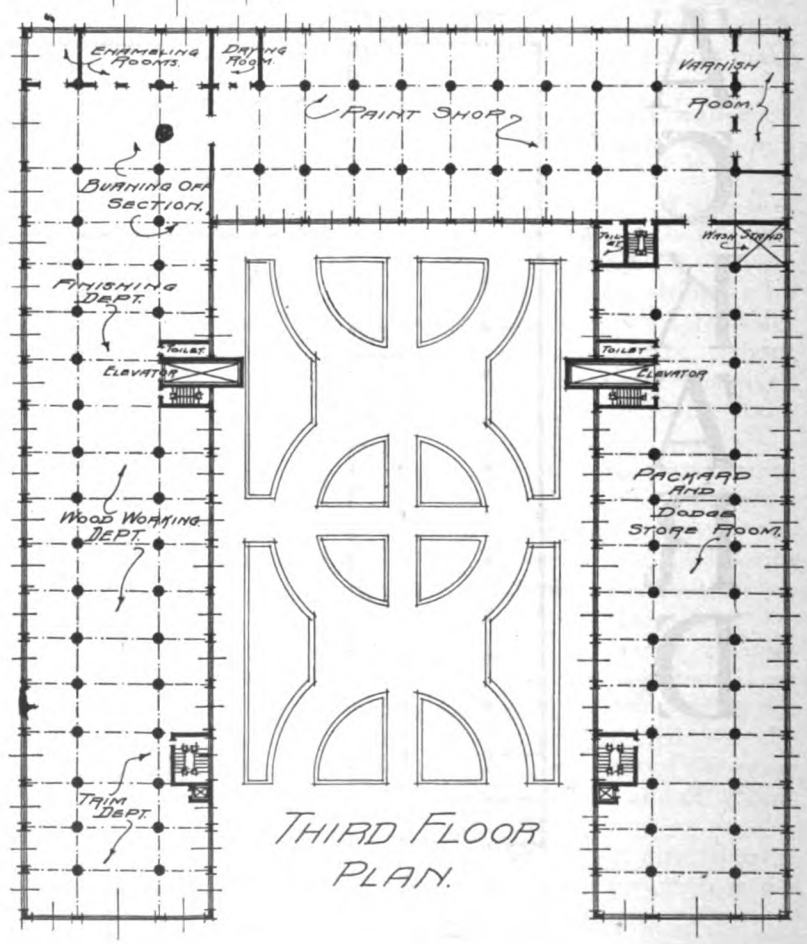
PLATE XXX-A





FOURTH FLOOR PLAN.





THIRD FLOOR PLAN.

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also a counter for the stock room, and customers and others come here for what they desire in the way of parts. Most of the remainder of the floor area in this wing is given over to the stock department, which is very large. Everything is filed away in accordance with a perfect system, so that there is never any delay in locating whatever is wanted.

In the rear of the stock room is space for storage of owners' parts. The middle wing on the second floor is utilized as a show room for used cars. The other wing is used as the truck sales room.

The easterly wing of the third floor is utilized as a store room for Dodge and Packard cars and trucks. In the rear there is a wash stand.

The finishing department is located in the middle wing, as are a varnishing room and a timekeeper's office. There is also a drying room, where the temperature is often up to 120 degrees. Asbestos and high pressure sprinklers serve as fire protection.

The finishing department, with the paint room, occupies the other wing. There is a burning off stand, also a wash stand. In the rear is an enameling room with ovens. The trim department is in front. The woodworking and nickel departments have ample accommodations.

Heavy repair work on trucks and cars is done in the central wing of the fourth floor. Here the welding and overhaul departments are located. There is also a windshield department, where glass is reset. A minor part of the wing is devoted to the used cars division.

In the easterly wing are the second and third series departments, where overhaul and repair jobs on the second and third series car are done. There is a machine shop especially for this work.

In the front of the westerly wing are the offices of the general service manager and controller. Workmen are now putting up more offices, it being desired to have the officials in offices near each other. Part of the front of the floor is now used as a sub-store room for bodies, etc. The overhaul department has the remainder of this wing.

Before a car, received for repair or adjustment, is sent to any of the departments, a "job ticket card" is placed on it. This card designates the department to which the car is to be taken. For instance, if sent to the testing department on the first floor, the card would read "1, Testing," and if to the trim department on the third floor, "3, Trim." Before this system was adopted there was considerable inconvenience and delay due to cars being taken to the wrong departments.

It is a rule of the service station that all promises to customers be kept, except, possibly, in extraordinary cases. When a job is promised for a certain time it is up to those in charge to see that the work is done by that time.

Before being turned over to a customer, a car that has been overhauled or otherwise repaired, is put through a stiff trial by employees of the testing department, and it must be in perfect shape before the job is marked "O. K."

In each of the service offices is an information bureau where the owner of a car is enabled to secure prompt information regarding the progress of the work on his car. The girl attendants can get a complete report of any job in less than a minute.

The service station is a truly enormous one, and few in the entire country are superior to it. One making an inspection of the plant is bound to be impressed by the cleanliness that marks every department, this being in contrast to many stations where the workmen seemingly are convinced that the shop cannot be kept clean.

The machinery, tools and other equipment is the best obtainable and there are numerous apparatuses invented or perfected by employees so that their work may be done better and more economically.

Service station men who have inspected the plant are agreed that the departments have been laid out ideally, both from the standpoint of efficiency and economy. The layout is such that in the progression of repairs unnecessary moving of work from floor to floor and from department to department is eliminated.

In fact, the equipment, or organization and system are such as to insure to customers the utmost in service, both for minor and major work.

Everything possible is done to promote the interests of the employees and keep them loyal to the company. The workmen are contented and are always ready to extend their hearty cooperation to any plan that will help the company. The employees are banded together in an accident insurance association, the insurance being handled by a large casualty company in Boston.

On the first Monday of each month representatives of the employees and the officials have a conference, at which recommendations for any changes in the plant or other suggestions are made. Each department sends delegates.

As a result of these conferences the heads of the company have received many valuable suggestions which have been adopted. The meetings give the officials opportunity to keep in close touch with the workmen and to get their point of view.

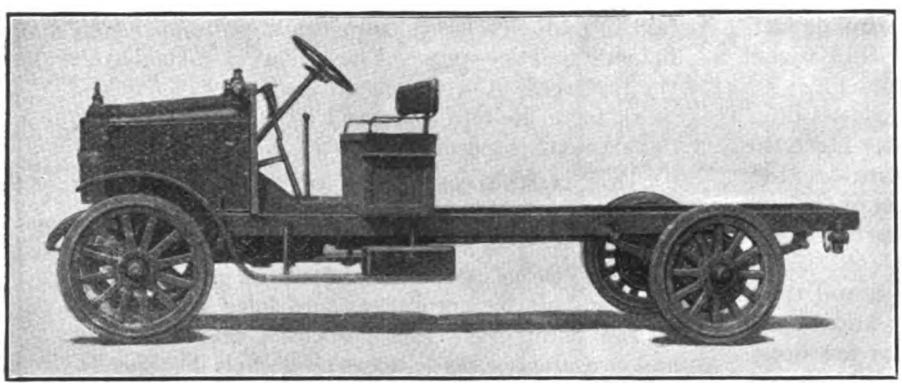
A curiosity that always interests persons escorted through the service station is the first Packard touring car, built in 1901. This car is in marked contrast to the beautiful Packards of today. The old machine is occasionally taken out for parades or other demonstrations. There is only one man in the service station who is willing to take a chance in running it, and he is able to drive the antiquated mechanism.

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ACASON ONE-TON WORM DRIVE TRUCK

PRODUCTION of a truck chassis that has a rated load capacity of 2000 pounds has been begun by the Acason Motor Truck Co., Detroit, which completes the series of power vehicles manufactured by this concern, the others being rated at 1½, two, 3½ and five tons. This is the lightest machine built by this company, and as it is the latest design completed by the Acason engineers, statement is made that it is a perfected product from every point of view.

The Acason company has built trucks for several years and gradually increased the series to meet the demand for units by owners who having purchased trucks of this make, desire to standardize their equipment. The company standardized its design and having developed a market added to the series as the demand justified. Each unit is practically the same save for proportion of parts, and the components are types that are produced by specialists and have been proven by service. Incidentally these construction units are known the world over as being high grade, and they are so well understood that satisfactory service can be afforded by practically every garage and service station.



Side View of the Acason One-Ton Worm Driven Truck Chassis with Full Equipment. The Latest Acason Production.

The assembling of Acason trucks is done with great care so that there is what may be termed a "balance" or uniformity of construction. The factors of safety are very large and this makes for endurance and minimizes repair expense. As assembled the units are very accessible for adjustment or repair, this being of much importance because the labor necessary for attention is reduced to the lowest point that is practical.

The truck has wheelbase of 144 inches, which affords 118 inches of frame length back of the driver's seat for installing the body, without overhanging the rear of the chassis.

Has a Unit Power Plant.

The chassis is equipped with a unit power plant that consists of a Buda model RU engine assembled with a Fuller dry disc clutch and a Fuller selective type sliding gear transmission gearset. The engine is a four-cylinder, water cooled, four-cycle, vertical, L head construction with the valves at the right side. The cylinder bore is 3½ inches and the stroke 5⅛ inches, the engine being rated at 19.60 horsepower by the S. A. E. formula, but claim is made by the maker that it will develop 34 horsepower at 2100 revolutions a minute. The cylinders are cast en bloc with the water jacket integral, with the head of the water jacket open. The water jacket is unusually large and the construction insures that the water chambers will be free and uniform so there will be no obstruction to the flow of water.

The water jacket head is a large detachable plate, retained by studs, that has a deep channel, increasing in depth from rear to front that ends in the outlet manifold. The fuel intake is cored in the cylinder block and this serves to heat the inhausted mixture. The base flanges are heavy and there are end webs under the valve pockets that serve as seats for the plate that covers the valve mechanism. The cylinder block and the pistons are cast from a fine quality of gray iron. The machine work is very carefully done and tests of the cylinder are made for defects that might develop with the progression of the work. The pistons are fitted with three diagonally split rings and oil grooves are cut to equalize the distribution of lubricant.

The crank case is cast of aluminum in two sections, the upper being divided by a vertical transverse web that carries the center main bearing, and there are forward and rear extensions that form the housings for the timing gearset and the flywheel. The lower section is the base of the crank chamber and the oil reservoir and this has forward and rear extensions.

Engine Construction Details.

The crankshaft is a special alloy steel drop forging, a three-journal type, the journals being 1⅞, two and 2⅛ inches diameter from front to rear and 2⅞, 2¼ and 3¼ inches length respectively, a total length of 8⅜ inches. The forging is heat treated and carefully ground to size. The crankpins are 1⅞ inches diameter and two inches length. The camshaft is drop forged from a special steel with the cams integral and this is heat treated, annealed, case hardened and ground to size, much care being taken to obtain accuracy of the cams. The wristpins are steel tube, case hardened and ground, and these are fixed in the piston bosses, the connecting rods oscillating on the pins.

The main and crankpin bearings are babbitt, in bronze cages, these being adjustable with shims, and the connecting rod caps are each retained by two nickel steel heat treated bolts. The three camshaft bearings and the small end bushings of the connecting rods are phosphor bronze. The timing gears are large diameter and wide faced, and are helical cut. These gears are cut with especial attention to obtaining accurate gear centers and end play is obviated by the use of thrust screws. The valves are cast iron heads electrically welded to soft steel stems, and these are fitted in long renewable guides. The mushroom type tappets are installed in guides seated in the base flange of the cylinder block and these are equipped with adjusting screws and nuts.

Cooling and Lubricating Systems.

The engine is cooled by a thermo-syphon circulation of water through the cylinder jackets and a special type truck radiator of large size that is mounted on spring supports and fitted with a steel guard to prevent damage in the event of coming into collision with another vehicle or object. Radiation is perfected by a large fan mounted on a ball bearing and adjustable bracket on the forward end of the cylinder block that is driven by a flat belt from a pulley on a short shaft driven by the timing gearset.

The engine is lubricated by a combined positive feed and splash system. The oil is drawn from the reservoir in the base of the engine case and forced through pipe by a geared pump in sufficient volume to flood the main bearings and timing gearset, and the drainage flows to the troughs in the base of the crank case, whence it is distributed to the cylinders, pistons, wristpins, camshaft bearings, cams and valve tappets by the splash of the connecting rods into it. The excess oil drains from the crank chamber to the oil reservoir, where it is filtered. The oil level in the reservoir is shown by an indicator. The pump and strainer may be removed from the bottom of the crank case without dismantling other parts. The power plant is suspended at this point. The fuel is supplied through a Schebler or Rayfield carburetor at option of the purchaser and the source of the ignition current is an Eisemann high tension magneto.

The Power Transmission System.

The clutch is a Fuller multiple dry disc construction that requires practically no attention and is self-adjusting. It is claimed to be very efficient and easy of engagement. The transmission gearset is a truck type having three forward speed ratios and reverse. The shafts are heavy and the gears are large diameter and have wide faces. The gearset operates in a bath of heavy oil.

The power transmission system is a two section shaft fitted with three universal joints, the rear end of the forward section being mounted on an SKF self-aligning ball bearing, that is coupled with the worm shaft of a Timken worm shaft and worm wheel rear axle. The entire axle assembly is housed in a sin-

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gle casting. The axle is a full floating type and is equipped with Timken roller bearings. The front axle is a steel drop forged I section.

The frame is pressed steel channel 4 9/16 inches wide with webs 2½ inches, of 3/16 inch material. It is 36 inches wide and is "necked" to 24 inches at the forward end. The overall length is 202¾ inches. The frame is strongly reinforced by cross members and gusset plates. This is mounted on semi-elliptic springs. The wheels are wood, artilery type, shod with solid tires, 36 by 3½ inches front and 36 by five inches rear. The chassis is equipped with 36 by six inch pneumatic tires at additional cost.

The steering column, an irreversible worm and nut type, is at the right side. It has a 20-inch hand wheel. The control is by foot pedals for the clutch and service brake, hand levers for the regulation of the ignition system and the fuel supply from a 15-gallon tank under the the driver's seat, and hand levers for shifting gears and the emergency brake in the center of the footboard. The brakes operate in drums on the rear wheels, both sets being an internal expanding type

The chassis is equipped with driver's seat, running boards, fenders, motometer, oil dash and tail lamps, mechanical horn, jack, oil can and full set of tools.

FARMERS MAY COOPERATE FOR TRUCK SERVICE.

Farmers are considering the establishment of cooperative delivery of milk in motor trucks. A resolution to buy the necessary equipment for delivering milk and all dairy products to the consumers was among the important proposals at the closing session of the New England Milk Producers' Association in Boston. The convention cheered the plan of H. W. Tinkham, Warren, R. I., and Walter B. Farmer, Hampton Falls, N. H., the special committee on marketing, for handling dairy products through a system of plants and other facilities owned and operated by farmers..

KENDAL GETS LARGER QUARTERS IN DETROIT.

The H. B. Kendal Co., Detroit, has moved from 56 Cadillac square to more commodious quarters at 1404-5 in the Real Estate Exchange building. The company handles standard makes of forgings, pressed steel stampings, drills, cutters, reamers, bolts, rivets, cap screws, tool kits and other motor utilities. H. B. Kendal is president.

INDIANA POWER VEHICLE LICENSES.

There were 227,160 automobile licenses issued last year in Indiana. In 1917 there were 192,195, in 1916, 167,165 and in 1915 137,000. There were 990 dealers' licenses issued last year.

John W. Hertzler, formerly assistant manager of the Bearings Co. of America, is now secretary and treasurer of the Pressed and Welded Steel Products Co., Long Island City, N. Y.

Manhattan Streets Heavy Burdened by Traffic.

Manhattan Island, New York City, has the greatest engineering problem of any city in the United States to build roads sufficiently strong to withstand the excessive traffic, C. M. Pickney, chief engineer of highways of Borough of Manhattan, told the delegates at the convention of the American Road Builders' Association at the Hotel McAlpin, New York. This is due especially to the congested and very heavy traffic on a few thoroughfares.

The average weight which the Manhattan engineers have found was imposed on these streets is from 100 to 200 tons for each square foot of surface on moderately used highways, such as Spring and Worth streets, the Bowery and Central Park West. On such streets as Chambers, Canal, Hudson and Lafayette the weight is from 200 to 300 tons, and on the more congested thoroughfares, as West, South and Delancey streets and parts of Eighth avenue, the load averages from 300 to 400 tons. At some periods of the day for a period of eight hours, West street averages a weight load of 500 tons, while the busy section of Fifth avenue, north of 23rd street, averages 550 tons in winter, dropping to about 250 tons in summer.

"The enormous increase of traffic on these busy streets," said Mr. Pinckney, "is making the problem of providing strong foundations for the road surface a most serious one. Of the three types of foundation material, namely concrete, old stone pavement, and macadam, concrete gives the best results. Manhattan Borough has 354 miles of road surface laid on concrete, 101 miles on stone and two miles on macadam. Concrete foundation is laid to a depth of six inches, and the average breakage or caving in has increased slowly in the last five years, having been 5/100 of one per cent. in 1913, 8/100 of one per cent. in 1917, and 12/100 of one per cent. in 1918."

The annual cost at present to restore these caved in sections is about $30,000, Mr. Pinckney explained. The highway department has considered the advisability of making the concrete depths thicker, but to do this it was found that the initial cost would range from $100,000 to $200,000, and solely as a matter of economy the city authorities have deemed it wiser to repair the breaks at $30,000. The road problem of New York is rendered all the more difficult, Mr. Pinckney pointed out, from the fact that about 150,000 square yards of road surface is torn up every year for repairs to conduit systems beneath the roadways.

HANDLES STANLEY STEAMER.

The Hamilton-Whittaker Co., new comers in Indianapolis, has opened for business at 961 North Meridian street and is handling Stanley steam passenger cars.

ANOTHER BIG ADDITION FOR COMMERCE PLANT.

The Commerce Motor Car Co. has awarded contracts for a substantial addition to the already commodious plant at Mackie and Solvay streets, Detroit. Frederick J. Winter, architect, submitted the plans which have met with the approval of the board of directors of the Commerce company.

This addition will give the company more than 100,000 square feet of floor space for the manufacture of Commerce trucks. The addition will face on Mackie street and have a 285-foot frontage. All modern conveniences for employees have been incorporated in the plans.

The company started eight years ago to manufacture Commerce trucks in one building, 50 by 200 feet. Afterward another building, 90 by 200 feet, was added, and then another, 50 by 200 feet. Still another was found necessary and this was 65 by 240 feet.

Although the war orders for this company made it necessary to increase the size of the plant, the present commercial orders demand even further expansion.

The latest addition will give the company five large, well lighted buildings in the rear, as well as a large office building and service plant. The structures are all of brick and steel.

Under the present arrangements and with the new additions, the manufacturing plants are modernized and trucks can be manufactured with precision and in quantity under ideal conditions. Increased business demands for Commerce trucks call for the construction of the new building immediately.

PONTIAC HAS MORE WORKMEN NOW THAN LAST YEAR.

A canvass disclosed that 21 leading firms in Pontiac, Mich., now employ 5260 shop workers, as against 4549 last October. The largest increase was at the plant of the Oakland Motor Car Co., where 1000 men were employed last year and 1500 now. The Wilson Foundry and Machine Co. decreased from 1400 to 1350, but there will be in addition 300 men at the former plant of the Monroe Motors Co., which the Wilson interests bought recently. O. J. Beaudette, body maker, employs 900 men, and plans to hire more.

HEPBURN TORBENSEN SALES DIRECTOR.

C. F. Hepburn has been appointed director of sales of the Torbensen Axle Co., Cleveland, O., manufacturer of internal gear drive truck axles. Mr. Hepburn has been serving in the Ordnance Department, U. S. A., for the past year, with the rank of major.

HANDLES INTERNATIONAL TRUCKS.

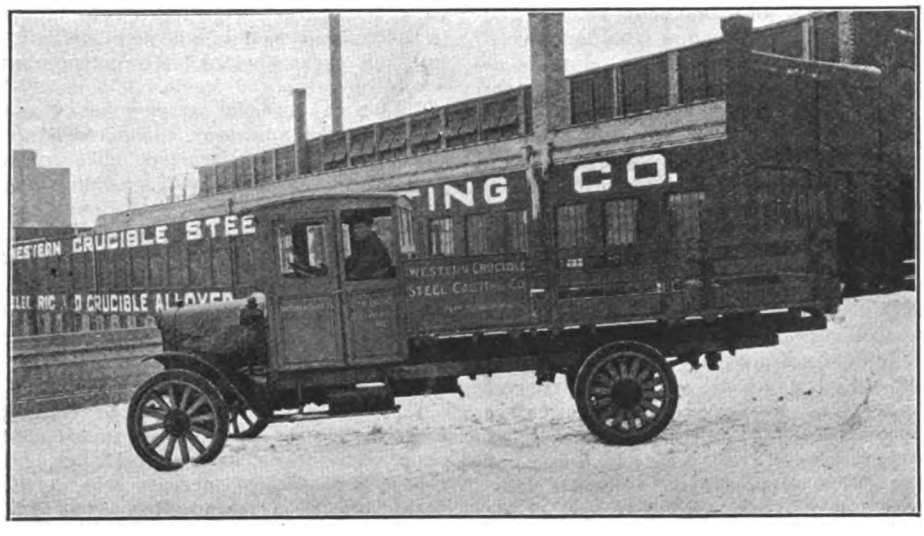
The Steinhart Motor Truck Co., Indianapolis, has taken on the distribution of the International line of trucks for Central Indiana. O. D. Chapman, long identified with the International Harvester Co., is manager.

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ACME TRUCK OWNERS' ECONOMIES

TWO Acme trucks are used for the general haulage of the Western Crucible Steel Castings Co., Minneapolis, Minn., according to a letter sent by that firm to Grosvenor, Lapham & Co., Chicago. Repair and upkeep bills for one of them, a two-ton truck, totaled $20.10 for the period from Sept. 14, 1917, to Nov. 18, 1918. The other truck, a one-tonner, was put to haul usage carrying supplies, etc., in the fire devastated districts of northern Minnesota, running night and day for 10 days over the worst of roads. The letter states:

"Sept. 14, 1917, we purchased through the Brehm-McMullen Co. of this city one two-ton Acme truck. This machine went through last winter doing eight to 10 hours work every day. Last winter was a very severe one on trucks, owing to the great amount of snow and cold weather, and our loads were large, always from two to three tons. This car has been in actual service since Sept. 14, 1917, to date, having been in that time out of service in all six days at intervals, this time being lost in cleaning out carbon and grinding in valves. This, of course, should be done often as it is economical.



Acme Two-Ton Truck Operated by the Western Crucible Steel Casting Co., Minneapolis, Minn., at Surprisingly Low Cost for Repairs.

"All the repair work that has been done went through the Acme Truck Co. of this city and we are pleased to say that all of our repair bills on the Acme two-ton truck and other upkeep bills from Sept. 14, 1917, to date have been $20.10.

"In May, 1918, we purchased a one-ton Acme truck through the Minneapolis branch and so far have not spent one cent for repairs.

"When the call came for trucks to handle supplies in the fire devastated districts of northern Minnesota, we sent this one-ton truck and driver with the state militia. This car was in actual service for 10 days running night and day over corduroy roads with bridges and culverts burned out, through the woods and swamps, picking up the dead and hauling supplies to the living. No truck was ever put to a more severe test than this one. The driver was instructed not to spare the machine, but to 'do his bit' for these poor unfortunate people who had lost their homes, and in some instances whole families had been wiped out. If you could have heard the praise this company got from the soldier boys and the grief stricken people whom this truck was able to supply with food and haul to a place of safety, you would say it was worth a dozen trucks. This car averaged from 50 to 75 miles a day over roads that seemed impassable and came home just as good as when it left and the driver surely won a lot of praise for the Acme truck and for the way in which he 'stuck to the job.'

"I tell you the above so that you can see why we like the Acme truck, as so far it never has failed us. We are about to contract for another three-ton Acme as our business demands it. I wish to say a word here of the splendid service rendered by the Acme Truck Co. of this city and you will make no mistake when you place your order for an Acme truck.

"Possibly a word as to the consumption of gasoline. Our big truck averages 12 miles per gallon of gasoline. We have no record of the small car.

"The writer thoroughly investigated different makes of trucks before purchasing an Acme and as we had been using automobile trucks for many years we were very anxious to get the best and are glad that we decided on an Acme, as they have surely made good. I believe there have been more Acme trucks sold in Minneapolis this last year than any other make. This is the first time we have been called on for our opinion of the Acme truck."

The Acme Motor Truck Co., Cadillac, Mich., has also received a record of an Acme truck that has covered nearly 17,000 miles, at a total repair expense of $21.70, and which still makes 12 miles to the gallon of gasoline. This truck is in use in a fruit and farm field in Muskegon county, Mich. The record of this truck is stated as follows:

"Back in October, 1917, Roy O. Thomas, who had until a few months before that time, been a cog in the wheel of city life in various American cities, but who had forsaken the city and turned to the farm, after a deep and exhaustive study of the motor truck situation (and it should be remembered that the truck industry was at that time a mere infant) selected the Acme as the make of truck which in his opinion would earn dividends for him. He purchased a two-ton Acme, his first work being that of delivering apples to the grocers of Muskegon, a little city of about 30,000 inhabitants, situated 21 miles southeast of his farm, which he afterwards named "Acme Fruit Farm" in honor of his truck.

"Winter in Michigan is seldom a thing of joy, the fall of snow as a usual thing being any place between two and eight feet. The first winter of Mr. Thomas' truck experience the winter of 1916-17, saw an unusually heavy fall of snow and in places Mr. Thomas says the snow was so deep that the road was above the level of the top of the fence posts, but in spite of this he did not miss a trip during the entire winter, delivering considerably more than 10,000 bushels of apples to Muskegon grocers during the winter, making one trip each week.

"It requires on an average 1½ hours to make the trip from the Acme Fruit Farm to Muskegon, and the average load is 126 bushels of apples.

"Asked regarding the day's work he was best suited with, Mr. Thomas replied that one day he covered 204 miles and put in storage 504 bushels of apples. Mr. Thomas has been driving passenger cars and trucks for the past 15 years and he makes the statement driving his Acme is as easy as driving any passenger car, and that the fruit is in as good condition in every way when it reaches the market as it was when he left the farm, and that he has yet to break the first glass in moving household furniture, which he does during the off season for fruit.

"Thomas has made a number of trips with household furniture from Muskegon and Grand Rapids to Detroit, and from Detroit to various parts of Michigan. A recent trip with household goods shows a total mileage of 446 miles. In reply to a question put to him regarding number of miles secured on an average from a gallon of gasoline, Mr. Thomas stated that his records showed an average of 12.

"This truck, which is here shown coming out of the garage covered with mud from one end to the other, has covered 16,700 miles, with a repair bill of exactly $21.70, an amount per mile so small that it's hardly worth figuring up.

"It should be remembered that Michigan does not as yet have an efficient highway system, and the mileage given above covers everything from the old fashioned 'corduroy' roads still found in various places in Michigan to the most modern concrete construction found in the vicinity of Detroit and in spots all

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over the state, sand, gravel, mud, every kind in fact.

"It would be interesting to know just how long a truck would run, under careful handling, if every foot of road covered was of concrete—smooth, hard and wide, and show much smaller the repair bill would be.

"It will, of course, be inferred from this record that Mr. Thomas is a careful driver and that he is quite competent to take proper care of his machine, but only to a degree that every careful driver does.

"This is certainly a wonderful example of truck efficiency—16,700 miles of fairly heavy hauling, with a repair bill of a trifle over $1 per 1000 miles.

"Mr. Thomas states that his truck will still average 12 miles to the gallon of gasoline."

PLAN PREVENTION OF HIGHWAY ACCIDENTS.

The introduction of motor trucks into the commercial life of the nation, which is taking place on such a large scale, tends to increase the possibility of street and highway accidents. The Highways Transport Committee of the Council of National Defense takes cognizance of this fact in launching a nation wide movement looking to a reduction of the number of accidents resulting from careness either on the part of the drivers of vehicles or of pedestrians.

The committee will carry on the campaign through its regional, state, district and local organizations. In this work it has the assistance of leading authorities throughout the country. The National Highway Traffic Association, recently organized for the purpose of advancing the efficiency and regulation of highway traffic, has indorsed this activity of the Highways Transport Committee.

It is planned to have highway regulations more generally adopted by authorities and copies of these regulations made easily available to the public.

FROST GEAR AND FORGE CO. PLANS EXPANSION.

Stockholders of the Frost Gear and Forge Co., Jackson, Mich., at their annual meeting voted to increase the capital stock from $350,000 to $750,000 and to begin at once the erection of a large addition. These officers were elected: President and general manager, E. J. Frost; vice president, M. C. Townley; secretary, Robert A. Smith; treasurer, A. S. Glasgow; directors, the officers, A. R. Ford, Thomas Woodfield and L. C. Bootes. The company had a prosperous year.

ARMY TRANSPORT DEPARTMENTS CONSOLIDATED.

The motor transportation facilities of all departments of the army in the Department of the Northeast have been consolidated under one head. Capt. A. D. Brown is in command. The change was made in the interests of economy of operation and repairs.

Says Townsend Bill Means National Road Policy

Roy D. Chapin, former chairman of the Highways Transport Committee of the Council of National Defense, and chairman of the Highways Committee of the National Automobile Chamber of Commerce, believes that road building along economic and scientific lines will be given a tremendous impetus the country over by the passage of the Townsend bill, introduced before Congress recently.

"The United States is on the eve of a revolutionary epoch in highways transportation," said Mr. Chapin. "Hundreds of millions of dollars are available now for construction throughout the country and scarcely a day passes that we do not hear of some new movement looking toward better highways.

"So rapidly has the movement come to a head with the effective aid of the Department of Labor and other agencies interested in the assimilation of labor, that our past methods of procedure have become antiquated and we are left face to face with the need of a definite policy which will assure the taxpayers of the United States the very best results will be obtained from these expenditures.

"My experience on the Highways Transport Committee demonstrated to my own satisfaction that the future road building of the country must be done with an eye to developing the enormous latent resources of the country, which means scientific location coupled with scientific construction to meet the needs of new traffic. Further than that, we must recognize the fact that state lines are political, not physical, and accordingly we must link up state highways, one with the other, into an effective whole.

"The Townsend bill provides a sure means for such a program and it is safe to say that all who understand the importance of efficient highways transportation will be solidly in favor of its adoption by Congress at the earliest possible moment."

NASH MOTORS FINANCES.

The Nash Motors Co. reports net profits after reserve and taxes for the fiscal year ended Dec. 1, 1918, of $1,473,638, equivalent, after preferred dividends, to $24.47 a share on the 50,000 shares of common stock. In the previous fiscal period from Aug. 16, 1916, to Dec. 1, 1917, net profits aggregated $2,027,783.

REPUBLIC MOTOR TRUCK PLANT BACK TO NORMAL.

The plant of the Republic Motor Truck Co. is now practically back on normal commercial production, according to President F. W. Ruggles, who says that trucks now being built for the government will be completed in March.

EXPORTS OF MINERAL OILS AND PRODUCTS.

The following statement of exports of oils from the United States is made by the Bureau of Foreign and Domestic Commerce, Department of Commerce, for the seven months ended January in 1919 and 1918:

Exports by group:	1919	1918
Mineral oils, gallons	1,589,383,332	1,552,732,237
Mineral oils, dollars	210,962,671	159,901,511
Exports by principal articles:		
Crude mineral oil, gallons	117,099,294	99,318,753
Crude mineral oil dollars	7,432,935	4,562,434
Lubricating oil, gallons	150,682,487	160,418,423
Lubricating oil, dollars	48,739,835	36,168,628
Gasoline, naphtha, etc., gal.	333,468,320	237,028,043
Gasoline, naphtha, etc., dollars	83,101,135	56,663,039
Residium, fuel oil, etc., gal.	681,577,784	723,469,914
Residium, fuel oil, etc., dollars	38,911,087	34,592,922

ROCHESTER AUTO SHOW SCORES GREAT SUCCESS.

The automobile show recently held in Rochester, N. Y., proved more successful than any held in the 11 years of automobile exhibiting there. Five thousand persons attended on the opening night. A membership campaign netted the Automobile Club of Rochester many new members. Trucks, cars and accessories were shown, with a great number of exhibits.

George W. Henner, president of the Rochester Auto Trade Association, opened the show by introducing Dr. Frederick R. Smith, president of the Automobile Club, who delivered an appropriate address.

MOTOR TRUCK ASSOCIATION'S BEEFSTEAK DINNER.

The Motor Truck Association of America will hold its sixth annual beefsteak dinner at Churchill's restaurant, New York City, March 19, at 7 p. m. A private room has been engaged. The dinner will be an occasion of welcome to Maj. George Alan Green of the British Tank Corps, who will relate some of his experiences in the war zone. Many prominent guests will be present.

BUYS SITE FOR GOTHAM GARAGE.

John J. Gillen, Inc., has bought a plot of eight lots on the north side of 18th street, between 10th avenue and Marginal street, New York City, and will improve the property with a large garage. The Consolidated Gas Co. of New York formerly owned the property.

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TRUCKS AND TRACTORS IN STREET CONSTRUCTION.

The report of the Committee on Concrete Roads and Pavements of the American Concrete Institution, in recommending practise for concrete road and street construction, makes this recommendation for "Hauling equipment."

"Horse drawn dump wagons, motor trucks, tractors and industrial railways are all used for hauling materials. For short distances over bad roads wagons may be most economical.

"Trucks are coming into wide use and where the roads over which they operate are in fairly good condition, are to be preferred to team hauling. Three-ton capacity trucks, capable of good speed, are usually more efficient than the larger size when used over the average unimproved road or pavement subgrade. The smaller trucks do not cut up the subgrade so badly and are easier to turn in cramped quarters than the larger machines. Industrial railways are adapted for use where the job is large, the average haul several miles, and unloading facilities ample. The investment is high and the equipment, therefore, must be kept in constant use for economic operation."

Electric Tower for Trimming Lofty Street Lamps

San Francisco's noted "Path of Gold" as electrically lighted Market street is known, is kept illuminated by means of a specially constructed tower truck, operated by storage batteries, a 10 horsepower motor being used for the operation of the truck. In designing the tower it was necessary to provide three sections, so that it could be lowered so the vehicle could pass under the trolley wires, and when raised would be sufficient height for the light trimmer to reach the highest lamps, which are 35 feet above the sidewalk.

The truck weighs four tons and the springs are bolted down so as not to act, as the tower at certain places in Market street where the gutters are deep and sharp, often stands at an angle of nearly 25 degrees, and if the springs were free the tower might sway to a point where it would be dangerous.

The tower is raised and lowered by an auxiliary hoist operated by a small electric motor driven by current from the main storage batteries.



Three-Section Elevating Tower on Electric Truck to Reach Lamps 35 Feet Above the Street, in Service of the Pacific Gas and Electric Co., San Francisco.

On the top of the tower there is a small electrically operated vacuum cleaner used to draw the soot from the lamp globes, which if allowed to collect and get wet, might cause a circuit of the current between the two electrodes, which would extinguish the lamp. This vacuum cleaner is also operated from the main batteries. A testing set is also mounted on the top of the tower, and current from the main batteries is used in testing the lamps.

In order to guard against the possibility of some meddler starting the truck or lowering the tower when the lamp trimmer is working on them, a special switch is provided by means of which the trimmer can disconnect the motor from the batteries.

On the top of the upper section of the tower is a platform, from which a horizontal extension can be projected when it is fully elevated, with which the trimmer can reach the highest lamp, which is approximately 35 feet high. This construction required hinged rails on top of the tower, which must be raised and a board placed thereon to enable the operator to reach the top light, and these rails must be folded when the tower is lowered, to enable it to pass under the trolley wires. The accompanying illustration shows the tower in use in Market street. The batteries are recharged for four hours daily, one hour at noon and three hours at night.

A second tower truck has recently been placed in operation to care for a new lighting system extended throughout what is known as the "Triangle District." These trucks are operated by the Pacific Gas and Electric Co.

HARRISON RADIATOR CORPORATION OPENS DETROIT OFFICES.

The Harrison Radiator Corporation has opened Detroit headquarters for the sales, service and inspection departments at 3066 West Grand boulevard, with Louis J. Schneider, sales manager of the company, in charge. Operating from Detroit these departments will broaden the scope of their service, as the company is already supplying many car manufacturers in this and surrounding territory. The departments will be provided with every facility for close cooperation with the manufacturers, motor car dealers and owners in service on cars equipped with Harrison radiators.

Mr. Schneider is already well known in Detroit, having spent a great deal of his time there while he had headquarters at the Harrison plant in Lockport, N. Y. The company plans to extend its organization with a view of establishing not only closer team work with manufacturers and dealers, but adequate service facilities for drivers of Harrison equipped cars throughout the country.

AUTO SCHOOL IS OPENED AT CAMP UPTON.

The Y. M. C. A., at the request of military authorities, has opened an automobile school at Camp Upton, Long Island, N. Y. Returning soldiers who are held at the camp for discharge will have an opportunity of attending the school, which will be in duplication of the school at the West Side Y. M. C. A. in New York City.

There is no tuition fee the school being part of the Y. M. C. A. contribution to the soldier. A large amount of used equipment was set aside by the military authorities for the school, and a two-story barracks was assigned for this purpose.

REPUBLIC DISTRIBUTORS FORM ASSOCIATION.

Distributors of Republic trucks have formed the Republic Distributors' Association, with these officers: President, H. M. Genung, Kansas City; vice president, W. R. Patterson, Dallas, Tex.; treasurer, William W. Martin, Pittsburgh; secretary, F. C. Meyer, St. Louis.

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MODEL E TWO-TON SULLIVAN TRUCK

CONCENTRATION on a single design truck chassis is the policy of the Sullivan Motor Truck Corporation, Rochester, N. Y., a concern that has been actively engaged in the industry for a number of years and which previously for a quarter century or more produced animal vehicles in considerable volume. The company has always specialized high grade products and has been widely known for the quality of its output.

The machine that it is now producing is designated as model E, having a load rating of 4000 pounds, it being a worm driven type of conventional construction. Claim is made that it is built of extremely high grade units, these including a Buda engine, Brown-Lipe clutch and Brown-Lipe transmission gearset assembled as a unit power plant, Bosch magneto, Timken rear axle, Timken front axle, Parish & Bingham frame, Sheldon springs and Ross steering gear.

Much is claimed for Sullivan engineering, for in addition to the use of specialized units the assembly has been made with extreme care. The chassis has been simplified and careful attention directed to obtaining accessibility so that in the event of adjustment or repair being needed the labor necessary has been minimized. All the units and the parts have large factors of safety to obtain endurance, this being essential to low maintenance expense, and much care has been taken to minimize the cost of operation.

Chassis Has Flexible Frame.

Statement is made that in service on poor highways hauling maximum loads the expense of operating and upkeep for long periods has been found to be very low as compared with other machines of similar ratings. The claim of the company is that the design has been very carefully perfected with reference to proportioning of units and parts and the flexible construction of the frame greatly reduces the stresses from vibration and road shock that would result in deterioration of rigid type on rough roads or paving.

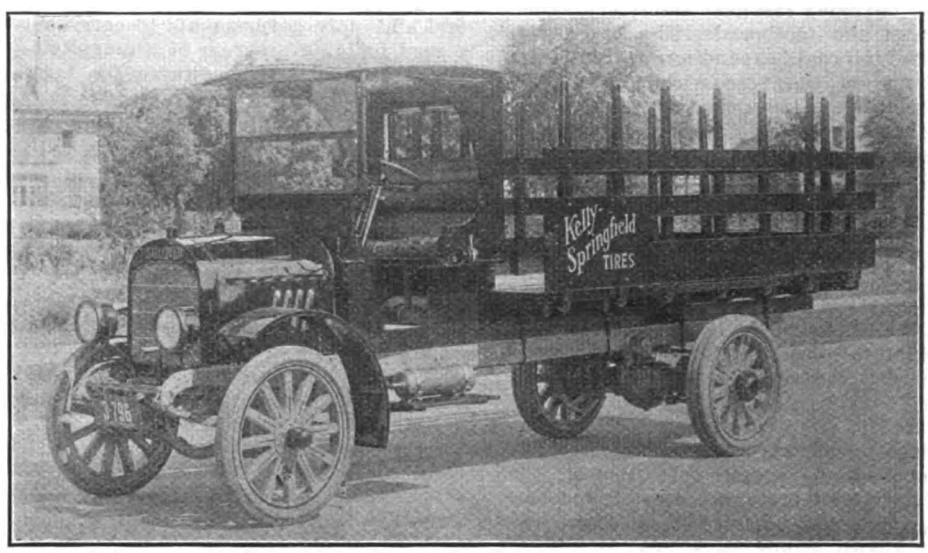
The components that are in frictional contact have unusually large areas to minimize wear and provision has been made to afford adequate lubrication. So far as possible all moving parts are enclosed and protected from abrasives by oil and dust tight housings. The steering gear and linkage are exceptionally heavy and the brakes are very large. The brake rods are designed and located to have straight pulls and means are provided for convenient adjustment.

Engine a Truck Type Buda.

The engine is a four-cylinder, four-cycle, water cooled, vertical, L head type, with the cylinders cast en bloc. The cylinder bore is 4⅛ inches and the stroke 5½ inches, the rating by the S. A. E. formula being 27.25 horsepower, but claim is made by the builder of this unit that it will develop largely in excess of this at maximum speed. The cylinder block is cast from gray iron with the water jacket integral, but with the head open, this being closed by a large plate with the water outlet manifold integral that is retained by a series of studs. The water chambers are large and the design is such that these can be completely cleared and positive freedom of water circulation obtained. The pistons are the same material as the cylinder block. The machine work is very carefully done, the block being tested before and after machining for defects by water pressure. The pistons are channeled for three diagonally split rings and grooves to insure effective oil distribution are cut.

General Construction of the Engine.

The crank case is cast from gray iron in two sections. The upper half carries the main and camshaft bearings and the lower half forms the base of the crank chamber and the oil reservoir. Both sections have forward and rear extensions that house the timing gearset and form the bell housing for the flywheel and clutch assembly. The crankshaft is drop forged from a special alloy steel, being a three-journal type, and this is heat treated and ground to dimensions.



Sullivan Model E Two-Ton Truck, the Newest Unit Built, with Rack Platform Body, Operated by the Kelly-Springfield Tire Co.

The camshaft is a steel drop forging with cams integral that is case hardened and ground. The connecting rods are drop forged I sections, heat treated. The wristpins are steel tube, case hardened and ground, and these are seated in the piston bosses, the connecting rods oscillating upon them.

The timing gears are large, have wide faces and are helical cut. The bearings of the crankshaft and the crankpin ends of the connecting rods are high grade babbitt in bronze shells that are adjustable with shims. The connecting rod caps are each retained by four nickel steel bolts. The camshaft bearings and the bushings of the wristpin ends of the connecting rods are phosphor bronze.

Cooling and Lubrication.

The engine is cooled by a circulation of water through the cylinder jacket that is forced by a centrifugal pump driven by an outside shaft, and by a large truck type radiator mounted at the forward end of the chassis that is thoroughly protected against the stresses of chassis frame distortion. The engine is equipped with a large fan on a ball bearing on an adjustable bracket on the front of the cylinder block that is driven by a flat belt from a pulley on the water pump shaft. The engine is lubricated by a full pressure system, the oil being drawn by a geared pump through a screened intake in the reservoir and forced through tube to the main bearings, the camshaft bearings and the timing gearset. The lubricant supplied the main bearings is carried through drilled channels in the crankshaft to the crankpins and thence through tube to the wristpins. The oil thrown off by the centrifugal movement of the crankshaft lubricates the piston and cylinder walls, the cams and the valve tappets. The oil drains from the crank case to the reservoir and is again circulated. The source of the ignition current is a Bosch high-tension magneto and the fuel is fed through an automatic float feed carburetor.

Power Transmission System.

The clutch is a Brown-Lipe dry multiple disc type, the steel discs being faced on one side with asbestos fabric. The clutch operates in a dust and water tight housing, requires but little attention and is practically self-adjusting. The transmission gearset is a selective sliding gear type, having three forward speed ratios and reverse. All gears and shafts are chrome nickel steel. The gears are large and have wide faces and the shafts are very heavy. It is constructed with Timken bearings throughout. The drive is by a large tubular shaft with universal joints at either end coupled to the worm shaft of the Timken axle.

The axle is a full floating type with the housing a single-piece casting, the differential gearset and the wheels being mounted on taper roller bearings. The forward axle is a special steel I section drop forging. The wheel spindles are equipped with taper roller bearings. The wheels are wood, artillery type, having

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12 square spokes, two-inch in the forward pair and 2½-inch in the rear pair, which are shod with 36 by four-inch tires forward and 36 by six-inch tires rear.

Frame and Other Units.

The frame is a pressed steel channel section six inches wide, with 3½-inch webs, of quarter-inch stock. This has four cross members besides two tie rods, one at the forward spring horns and the other at the rear shackles of the rear springs, the brake shafts and the rear support arms of the engine case. The cross members are reinforced by gussets. The frame is carried on semi-elliptic springs, the rear set being outside the frame. The forward set is 40 inches long and 2½ inches wide and the rear set 52 inches long and three inches wide. The springs are installed to the Hotchkiss system, they taking the driving and braking stresses and the torque.

The steering column is at the left side, the linkage being very heavy, and the control is by foot pedals for the clutch and service brake, hand lever of the steering column for the fuel supply and hand levers for the emergency brake and changing the gear ratios in the center of the footboard. The brakes are both internal expanding within large drums on the rear wheel hubs. The wheelbase is 150 inches and the tread 56 inches forward and 58 inches rear. The chassis is sold with the usual standard equipment for $2850 f. o. b. Rochester, N. Y.

ACCESSORIES AT RICHMOND AUTO SHOW.

The Richmond Automobile Trade Association holds its third annual passenger car and accessory automobile show in Gray's Armory, Richmond, Va., March 3-8. Truck dealers have open house during the same week, with special displays at their sales rooms. The armory was not large enough for both the passenger and truck exhibits. Invitations to attend were sent to all the dealers in Virginia and in the northern part of North Carolina. The committee in charge consisted of B. A. Blonner, chairman; H. A. Grant, J. H. Lane and F. H. Frasier.

NEW YORK ASSEMBLY PASSES TRUCK TUNNEL BILL.

The New York-New Jersey vehicular tunnel bill was passed by the New York assembly without an opposing vote.

The measure is designed to provide for the acquisition of lands and the construction of a tunnel or tunnels beneath the Hudson river jointly with the State of New Jersey, for vehicular and pedestrian traffic.

The bill carries an appropriation of $1,000,000 for the beginning of the work.

WOLVERINE BRASS EARNINGS.

Wolverine Brass Works, Grand Rapids, Mich., had net earnings of $220,400 in 1918, making a total surplus as of Jan. 1 of $305,567 after payment of $87,195 in common and preferred dividends.

Nearly $600,000,000 Is Available to Build Roads

Under the terms of the Federal Aid Road Act, the United States will have with full state cooperation, $574,000,000 for cooperative road building during the next three years. The Federal part of this fund is assured by an extra appropriation of $209,000,000 in the postoffice appropriation bill, just passed by Congress and signed by the President.

It is pointed out by officials of the Bureau of Public Roads, United States Department of Agriculture, that this amount of funds is the largest ever appropriated for similar purposes and for a similar period by any government in the history of the world. This bureau administers the provisions of the Federal Aid Road Act and cooperates with the state governments in the expenditure of the money.

The appropriation will enable the Federal and state governments to carry out a road building program of a magnitude never equaled. Expenditures for highway work in the United States this year are likely to amount to a half billion dollars or more.

The Bureau of Public Roads, on reports received from state highway departments, estimates the 1919 expenditures for roads and bridges at $385,000,000, or $110,000,000 more than the average expenditures for 1916 and 1917.

The law containing the new appropriation broadens the definition of a rural post road, under which class a highway had to qualify in order to receive the benefits of the Federal Aid Act. The old act required that mail should actually be carried on the road or that there should be a reasonable prospect that mail would be carried on it within a short time after improvement.

The new act says "the term 'rural post roads' shall be construed to mean any public road, a major portion of which is now used or can be used, or forms a connecting link not to exceed 10 miles in length of any road or roads now or hereafter used, for the transportation of the United States mails, excluding every street and road in a place having a population, as shown by the latest available Federal census, of 2500 or more, except that portion of any such street or road along which the houses average more than 200 feet apart."

Government Limit Raised.

The new act also raises the government limit of contribution from not to exceed $10,000 a mile to not to exceed $20,000 a mile, taking account of higher present costs of labor and materials.

The law also authorizes the secretary of war to transfer to the secretary of agriculture material, equipment and supplies suitable for highway improvement and not needed by the War Department.

Of the $209,000,000 added to the funds available under the Federal Aid Road Act, the new law makes $9,000,000 available for expenditure by the secretary of agriculture for roads or trails within or partly within the national forests. It also provides other measures which are expected to give great impetus to the development of the road systems in the national forests.

The original Federal Aid Road Act, which became law in July, 1916, appropriated $75,000,000 to aid in the construction of post roads during a five-year period ending June 30, 1921, and $10,000,000 to aid in forest road building during a 10-year period ending June 30, 1926. Not over $3,000,000 of the original $85,000,000 had been expended prior to 1919, so that $82,000,000 plus $209,000,000, or a total of $291,000,000 of Federal funds will be available, of which $287,000,000 will be available during the next three years. The act and its amendment require the states to provide at least an equal amount on the post road work, and it is customary for the states and localities to contribute toward the forest road work.

NEW BUILDING WILL HOUSE INDIANA SHOWS.

The State Board of Agriculture of Indiana has been empowered by Governor Goodrich and the Indiana Legislature to erect a building at the state fair grounds at Indianapolis that will meet the needs of large exhibitors. The structure is to be styled the "Merchants' Building" and will be 375 by 450 feet in area. The building will be made available for the shows of the Indianapolis Automobile Trade Association, which worked zealously in conjunction with the State Board of Agriculture to have the bill passed.

Work on the building will be started at an early date and the structure will probably be ready for the next state fair. The need of such a building has long been felt, especially by the automobile association. The building will be constructed so that it can be heated, permitting exhibitions to be held there during the cold months.

GREAT BRITAIN HAS MOST OF RUBBER ACREAGE.

Eighty per cent. of the total cultivated rubber producing acreage of the world is now controlled by Great Britain, although the United States uses three-fourths of the world's output of crude rubber. The Goodyear Tire and Rubber Co., Akron, O., used about 10 per cent. of the world's supply—as much as the Central Powers used before the war.

SAXON-DOBLE MAY COMBINE.

It is reported that the Saxon Motor Car Corporation and the Doble Steam Car Co., both of Detroit, have opened negotiations looking to a merger of the two companies.

The Union Twist Drill Co., Detroit, has declared a quarterly dividend of 1½ per cent. on the preferred stock and a dividend of $6 per share on the common stock, payable to holders of record Dec. 20.

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UNIVERSAL TRUCK ACCOUNTING SYSTEM

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An Extremely Simplified Record of Time, Work, Cost and Revenue, Covering Every Detail of Any Highway Transportation Service, That Can Be Operated by a Junior Clerk, with Any Form of House Bookkeeping, for Any Number of Vehicles.

RARELY do those using their own vehicle equipment know the actual cost of service. The principal reason for this is ignorance of the possibilities of accounting. This is seemingly severe criticism of those who regard themselves business men, but it is absolutely true.

Thousands who are keen to have minute detail of every other expense of business operation will make large investment in power vehicles and leave their use to men who have no knowledge of transportation, or to drivers who are indifferent to everything save "putting in time."

The high grade five-ton truck with equipment costs approximately $6000. The cost of operation will include fixed charges of approximately $8 a day (including a driver's wage) and variable charges of from 22 to 25 cents a mile for each mile driven. Taking $8 a day and 22 cents a mile (a very conservative basis), the cost would vary with mileage as follows:

Miles									
10	20	30	40	50	60	70	80	90	100
$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00
2.20	4.40	6.60	8.80	11.00	13.20	15.40	17.60	19.80	22.00
$10.20	$12.40	$14.60	$16.80	$19.00	$21.20	$23.40	$25.60	$27.80	$30.00
1.02	0.62	0.4806	0.402	0.38	0.3533	0.3342	0.3020	0.3008	0.30

If the truck mileage is low the operating cost is high (save in rare instances), for the productiveness is usually in ratio to mileage, and low mileage means loss of time that might be made productive. Bear in mind the mileage cost obtains whether or not the truck is loaded. The greater the loaded mileage the greater the earnings. If the truck can be loaded constantly while in use it may be 100 per cent. productive, but constant haulage of capacity loads is not often possible. If, for instance, the truck is driven 20 miles loaded and 20 miles light the cost of haulage for the load is, as shown above, 80.4 cents a mile, or the mileage cost for the entire distance divided by the number of miles loaded.

This is a demonstration of the necessity of accounting. This establishes first of all the work done by the truck and the cost of the work. There are two possibilities for economy—either doing more work for the same cost or the same work for lessened cost. Unless one has accurate knowledge of the work and cost, economies cannot be made. There may be conditions that cannot be controlled that cause loss of time. When such facts have been established the economy of making investment that may lessen this lost time can be determined.

If changes cannot be made that will obviate or lessen loss of time prices can be made that will insure the operation of the vehicle at a profit. The truck owner must obtain sufficient revenue to justify the investment and operation. The price fixed by a competitor(if a contractor) is no measure by which to establish the value of truck service. The only basis is the cost plus a sufficient profit. Actual cost cannot be determined by guess or approximation. There are too many possibilities for loss. The only insurance is complete knowledge, and this cannot be obtained save by accounting.

The record must be complete, simple and meet every requirement. The truck owner who criticises records must understand that this evidences a willingness to endure loss. The time of a five-ton truck is worth, not including profit, $3 an hour on a basis of a 10-hour day. The loss of an hour a day for 300 working days of a year means $900. The saving of 33 cents a day in operating cost for the same period means $100; a combined total of $1000 a year for a single haulage unit.

Assume that this can be saved without effort, save the examination of report sheets that show instantly any fact relative to work or cost. It is the equivalent of an investment of $10,000 and a return of 10 per cent. And this is not an excessive economy. In five years, the assumed service life of a truck, the saving and the interest on this, if in bank, would replace the vehicle.

The owner need use only that part of a record system that will afford him the information he requires. He may use in summarized form details that have been well established. He may even use totals for periods if clerical work is debatable. But he does want, instantly available, all facts that have bearing on work done and cost for any period.

The Universal Truck Accounting System is what the name implies. It can be operated with any form of house bookkeeping. It is extremely simple. It is complete. It can be operated by a junior clerk. It can be detailed or summarized. With it any desired fact can be determined, and, best of all, it is averaged for periods and for days and for miles for every item of work, expense or earnings or revenue or profits. The cost of the complete system is but $10, to cover a period of one year.

The method of operating is detailed on the following pages.

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Universal Truck Accounting System

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VALUE OF RECORD

The value of a record is the detail it affords. Owners can determine from analysis where economies will be possible, and can direct attention to savings in every way and which will represent a very considerable amount. Good accounting means profit that would not be possible save with exact knowledge of how time and labor can be fully utilized. This system is comprehensive enough for any business and affords actual records covering every detail in truck earnings and costs. This system can be expanded for any number of trucks. A comparison of costs and work done will show the value of any make of vehicle.

OPERATION OF ACCOUNTING RECORD

TO START SYSTEM WITH NEW TRUCK.

Fill the Inventory Record with items showing the cost of the chassis and its equipment, the Tire Record with the items showing sizes, manufacturer's name, cost, make and wheel on which each was installed; the Chassis Record with the several items specified, and list the construction units of the truck as indicated. These are for reference in the event of ordering renewals or repair parts.

TO START SYSTEM WITH USED TRUCK.

Fill the records as stated above for use with a new truck and for same purpose.

FIXED CHARGES OR OVERHEAD.

WITH NEW TRUCK.

Enter against the different items as completely as possible the known charges. Other items can be approximated, which estimates should be very closely made. Should the costs be more or less than estimated, the difference can be credited or taken from the earnings of the vehicle at time the actual cost is known.

WITH USED TRUCK.

The period prior to beginning this system should not be considered unless full record has been maintained. If such records are available they can be transferred to the proper columns in this system and continued.

EXPLANATION OF RECORDS.

FIXED OR OVERHEAD CHARGES.

These must be charged whether or not the truck is used. They may be entered daily, weekly or monthly, but must be considered in estimating the cost of truck service. The amounts of items should be changed whenever there is any difference in the cost.

The items can be entered collectively or separately as follows: Interest, insurance, taxes, license, storage (garage), office cost.

EXAMPLE OF OVERHEAD COSTS.

Interest, 6 per cent on $3000	$180
Insurance, fire, theft, liability	150
Taxes, $15 a $1000	45
License, registration and drivers	30
Storage at $15 a month	180
Office cost at $10 a month	120
Total	$705

(20½ cents a mile), which would give $28.51 for 100 miles.

To determine the charge for a work on the basis of hours, mileage on the basis of 100 miles day, plus the fixed charge of $8.01, would give $2.85 an hour.

In neither case would profit be included. If the profit were placed as a third of the variable operating cost (100 miles a day) this would make the price a day by either method $35.34.

In event the truck is hired by the hour the charge is usually 10 per cent. more than the hourly price for a full day, or 35 cents an hour additional. This would then make the prices $35 a day on not to exceed 100 miles, and $3.85 an hour without regard to mileage. Both of these examples are for five-ton units and include profit.

DEPRECIATION COST A MILE.

Multiply the mileage by the determined depreciation factor, as 5 cents a mile.

DEPRECIATION EARNED.

The purpose of depreciation is to accumulate a fund (or to offset the first cost of vehicle and equipment) with which to purchase a new vehicle when the truck is no longer serviceable. As this is regarded and charged as an operating expense, the one for whom haulage is done should pay a depreciation charge. A fund must be accumulated that is either turned into general capital or segregated, for which a separate account is kept. If the separate account is kept the business has established a sinking fund. When this sinking fund equals the initial cost of the truck and the machine is still serviceable, the depreciation charge need no longer be made, but if it is continued in the prices the earnings of the truck will be proportionately increased. One will understand that the item "Earnings" includes the item "Depreciation Earned." By adding the total of the "Cost Summary" and the total of "Depreciation Earned," and subtracting the sum from "Earnings," the net profit from the truck will be obtained. Example:

Earnings		$18,500
Total cost	$12,750	
Depreciation earned	2,250	
	$15,000	15,000
Net profits		$3,500

This, of course, included setting aside a sinking fund, in which is $2500 that is not regarded as profit. Against this may be charged the lessened value of the truck.

HOW TO COMPUTE DEPRECIATION.

Divide the cost of the truck by the estimated service life in terms of miles. Example:

Cost of truck	$5000
Service life in miles driven	100,000

100,000)5000(0.05

Cost a mile, 5 cents.

Any standard make of truck, well maintained and overhauled annually, should have a service life of approximately what is claimed by the manufacturer.

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A working year of 300 days is assumed for convenience. Dividing the annual overhead cost by 300 distributes this cost on the anticipated working day or productive days when the truck must earn this expense. The estimated daily cost for such a working year of the above specified overhead would be $2.35, or .23½ per hour on basis of a 10-hour day.

OPERATING CHARGES.

When estimating the operating cost of a new truck a very close estimate can be made. After the system has been operative a short time the exact cost will be available. These must include gasoline, oil, other lubricants, repairs and upkeep, tires, depreciation, annual overhaul, wages.

All other than wages and annual overhaul are based on miles driven; wages and annual overhaul are based on days. The annual overhaul charge is expense in addition to repairs and upkeep, and is based on accumulating a fund to pay for complete restoration of the chassis at the end of a year, which will be necessary and which will cost approximately 10 per cent. of the chassis price and must be included in operating charges, or that cost will be a loss.

The definite cost for a day's work would then be:

Operating cost, overhead cost, driver's wage (helpers if any), annual overhaul estimate per day.

HOW TO FIND ANNUAL DAILY AND OVERHAUL CHARGE.

This is a sinking fund to provide for yearly restoration of the truck.

Truck chassis cost	$5000
Annual overhaul (10 per cent. of truck chassis cost)	500
Daily overhaul charge (300 working days the year)	1.66

Owners of used trucks have records (unless operation was very recently begun) from which averages for mileage cost of gasoline, oil, other lubricants, perhaps repair and upkeep, and probably tires can be approximated closely.

Owners of new trucks, having no records, should for time being adopt the operating mileage cost estimated by the truck salesman.

In either case the object is to fix a day's operating cost so that there will be a basis on which to figure the charge to be made for service.

After a record has been kept for a period the day's operating cost can be changed to the actual cost as determined from the work done and expense incurred. The variable operating cost will include the following, which may be carried out in decimals to 1/1000 cent if desired.

HOW TO FIND EXACT DAILY OPERATING COST.

Tires, 7000 mile guarantee basis	$0.0500
Gasoline, 3.5 miles a gallon at 25 cents a gallon	0.0714
Oil, 150 miles a gallon at 35 cents a gallon	0.0022
Other lubricants	0.0006
Repairs and upkeep	0.0310
Depreciation, 100,000 miles service life	0.0500
Total a mile	$0.2052

Approximately 20½ cents a mile for each mile driven.

The fixed charges will include

Overhead, a day	$2.35
Driver's wage, a day	4.00
Annual overhaul (10 per cent. of chassis cost), a day	1.66
Total a day	$8.01

To determine charge to be made for a work on the basis of mileage, add to the fixed charge ($8.01) the number of miles driven multiplied by the operating cost

TIRE RECORD.

This is carried in columns in which are entered the initial items when the tires are purchased, and which should include the original tire equipment on the truck. The estimated life of the tire is what is known as the guarantee—a specific mileage in normal service within a definite period. Assuming an illustration. Cost of tire $100, guaranteed for 5000 miles, the cost a mile is two cents. Example of computation:

Cost		$100
Repairs		6
		$106
Salvage	$3.00	
Adjustment	11.15	
	$14.15	14.15
		$91.85

5000)$91.85

$0.01837

1.837 cents a mile.

When tires are changed from one wheel to another the record on each wheel can be kept in addition to the general data shown in each column of the general record.

THE TRUCK AS AN INVESTMENT.

This determination can be found whenever desired:

Cost of truck chassis		$5000
Cost of tires		600
Total cost of truck		$5600
Depreciation earned	$1000	
Tire guarantee unused	300	
		1300
Book service value to owner		$4300

REVENUE.		EXPENSE.	
Earnings, less depreciation	$8500	Operating charges	$5500
		Net truck earnings	3000
			$8500

HOW TO COMPUTE AND CREDIT TRUCK EARNING.

The overhead charge is theoretically applied every day, but is only charged against working days because it must be included in the operating cost so that there shall be no loss to the owner. If, for instance, a truck is worked less than 300 days a year (being withdrawn from service for overhaul or any other reason), the daily overhead charge must be increased to whatever figure is necessary to include the annual cost. If the annual overhead is $705 and the daily cost is $2.35 on a basis of 300 working days, were the number of working days reduced to 250 the daily cost would be increased to $2.82.

Once the fixed and operating costs are positively known the prices made for work must be the aggregate of the two with a sufficient margin of profit, which must meet the requirements of the truck owner. This applies to those engaged in haulage as specialists, whose profits must be made on the work of trucks. Those engaged in any business and who operate their own vehicle equipment need only the fixed and operating costs for the purpose of accurate accounting. But to show the actual value of the service of the truck in the way of earnings it should be credited with a daily earning to the extent of what would be charged by others for doing the same work.

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HOW TO AVERAGE OPERATION EARNINGS AND COSTS.

Fixed and operating costs will afford the basis for establishing prices. The economies practical with power vehicle haulage can only be obtained by constant comparisons of figures with the object of doing more work for a given cost or reducing the cost of a given work. The totals of the monthly sheets showing work, time and cost records show:

Month's total, previous month's total, total to date, this month's daily average, previous month's daily average, daily average to date.

Of these the month's total shows the footings of all columns and the items of mileage, work time, fixed cost, operating cost, repair cost, cost summary and revenue for the days of any one calendar month. The footings of any or all of these columns, except the fixed costs, divided by the number of working days, give the figures entered in the extensions of these columns for "This Month's Daily Average." The fixed costs are carried every day, or may be entered as weekly or monthly totals, and the averages may not be changed throughout the record.

At the end of the second month's operation of the record the first month's total is brought forward to the second month's sheet, and the two are totaled, this affording the "Total to Date." One will note that this record is cumulative and shows the totals for the month, the previous months and the entire record period.

Similarly the second month's record will have "This Month's Daily Average" carried forward to it and entered against the "Previous Month's Daily Average," and the total of the two will give the "Daily Average to Date."

Obviously comparison of the "month's" and the "previous month's" daily averages will show increase or decrease of any item that can be shown in figures, and greater or lessened efficiency or cost of operation and revenue. These are all basic figures, however, and with these one can obtain any determination with any desired factor.

HOW TO OBTAIN COSTS AND AVERAGES.

AVERAGE ROUND TRIP.
Divide mileage by number of trips.

AVERAGE LOADING TIME IN MINUTES.
Multiply loading time in hours by 60 and divide result by number of trips.

AVERAGE UNLOADING TIME IN MINUTES.
Multiply unloading time in hours by 60 and divide result by number of trips.

AVERAGE SPEED.
Divide driving time in hours, or driving time in minutes, by mileage.

AVERAGING TIRE COST.
The cost of tires is charged in full when the truck is bought or the tires are replaced, and is shown in the operating cost. The estimated cost for any period can be learned by multiplying the mileage driven by the mileage cost a mile under the guarantee. The nominal vehicle tire cost a mile is found by subtracting the estimated cost from the original tire cost, and in turn subtracting the result from the total operating cost, which amount includes the full original tire cost.
Example:

AVERAGE MILES A KILOWATT HOUR.
Divide mileage by kilowatt hours total.

AVERAGE ENGINE OIL COST A MILE.
Divide miles by pints to obtain miles to the pint; divide cost by pints to obtain cost a pint; divide cost a pint by miles a pint.

AVERAGE GREASE (OTHER LUBRICANTS) COST A MILE.
Divide miles by pounds to obtain miles to the pound; divide cost by pounds to obtain cost a pound; divide cost a pound by miles a pound.

AVERAGE REPAIRS AND UPKEEP COST A MILE.
Add the costs of parts and labor for chassis, body, accident, battery and rental (hiring vehicle to replace the service of that repaired) and divide by mileage total.

AVERAGE BATTERY MAINTENANCE COST A MILE.
If an electric vehicle, or equipped with starting and lighting system, divide the cost by mileage total.

ACCIDENT REPAIRS COST A MILE.
Divide the cost by the mileage total.

OFFICE COST A MILE.
Divide the cost by the mileage total.

AVERAGE COST A MILE.
Divide the total cost by the total mileage.

KEEPING THE MONTHLY RECORD.
The items on the monthly record are entered daily as follows:

OPERATING CONDITIONS.
Weather and temperature from driver's day card.

MILEAGE.
Day's total, loaded, light, from driver's day card.

RECORD OF WORK.
Loads in, loads out, day's trips and deliveries or pickups, from driver's day card.

RECORD OF TIME.
Service time, driving time, loading time, unloading time, hours idle, repair time, tonnage hauled and load units from driver's day card.

FIXED COST—OVERHEAD.
Interest, taxes, insurance, storage, license and office cost from constants shown on example sheet.

OPERATING COST.
Quantity and cost of gasoline, electric current, oil, grease; cost of new tire or tire repair and miscellaneous expense are shown by sales slips or records, supplied either by the driver or the garage or supply station; depreciation is taken on the mileage and the depreciation factor; the wages of driver and helper from office record.

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Tires, original cost, 7000 mile guarantee.....$600.00
Tire cost a mile (guarantee):
Single 1.43c
Dual 2.86c
Vehicle tires cost a mile.....8.58c
Mileage driven to date 1000.
Vehicle tire cost to date..... 85.80

Tire guarantee unused value.....$514.20

Operating cost to date, total including tires.....$1260.50
Less unused tire guarantee..... 514.20

Nominal vehicle cost..... $746.30

Dividing the nominal vehicle cost by the mileage gives 1000)$746.30($0.7463 a mile.

NOTE—All other operating averages are given in the system.

AVERAGE DAILY SERVICE TIME.

Divide total daily service time, shown in hours and minutes, by days service.

AVERAGE DAILY COST.

Divide total cost by total days worked. (See Average Tire Cost.)

AVERAGE COST A LOAD.

Divide total cost by number of loads.

AVERAGE COST A LOAD UNIT.

Divide total cost by number of load units.

AVERAGE COST A TON MILE.

Divide tonnage by number of trips to get average load. Multiply average load by loaded mileage to get ton miles. Divide total cost by total ton miles.

AVERAGE COST A LOAD UNIT MILE.

Multiply loaded mileage by total load units and divide total cost by product.

AVERAGE DAILY REVENUE.

Divide total revenue by total days service. (See Average Tire Cost.)

AVERAGE DAILY PROFIT.

Subtract operating expense from total revenue and divide by total of days service. (See Average Tire Cost.)

AVERAGE GASOLINE COST A MILE.

Divide miles by gallons to obtain miles to the gallon; divide cost by gallons to obtain cost a gallon; divide cost a gallon by miles a gallon.

REPAIR COSTS.

Cost of parts and labor for chassis, body and battery and filled from shop records, the accident repairs being separate from these with check in the chassis, body or battery columns to indicate which of these the accident repairs applied to, and the rental charge from office record.

COST SUMMARY.

Includes the sums of all items under the heads of overhead, operating or repair, and the total of these three totals.

EARNINGS.

Under the heading "Earnings" is entered the amount earned or charged for collection to the credit of the truck, or the value of the work done; under the heading "Depreciation" is entered the depreciation credited for the day, the purpose of having this parallel the earnings column being to show at a glance the productiveness of the truck as compared with the total cost.

CONDITION OF MACHINE.

The condition of the truck at the beginning and end of the day's work is shown and from the driver's day card may be learned whether or not repairs or adjustments were made, the repair or adjustment needed, the tire changes, the time and place of accidents and the names, addresses and telephone numbers of witnesses.

WORK TRIP RECORD.

On the reverse of the driver's day card is a trip record which specifies the number of trips, the points between which the trips were made, the units and weights of the loads, the time of each trip in hours and minutes and the mileage in either direction. These cards can be used in any work.

LOAD UNITS.

Load units as applied in this record specifies in a general way the number of units in a load. A load of coal, sand, gravel, crushed stone or similar material would constitute one unit; a load of machinery might consist of five units; a load of barrels might consist of 35 barrels; a load of bales might consist of 30 bales; a load of cases might consist of 80 cases; a load of packages might consist of 215 packages, and so on.

NOTICE:

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PAWTUCKET RHODE ISLAND

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INVENTORY

CHASSIS LESS TIRES	BODY PRICE	EQUIPMENT PRICE	PAINTING	EXTRAS	FREIGHT

TIRE EQUIPMENT

	RF	LF	RR	LR
SIZE				
MFRS. NO.				
COST				
MAKE				

CHASSIS DETAIL

OWNER	ADDRESS	TRUCK NO.
MAKE	MODEL	TYPE
LOAD CAPACITY	CHASSIS NO.	ENGINE NO.

CONSTRUCTION UNITS

	MODEL OR SIZE	MANUFACTURER	ADDRESS
ENGINE			
CLUTCH			
TRANSMISSION			
UNIVERSAL JT.			
REAR AXLE			
FRONT AXLE			
WHEELS			
SPRINGS			
FRAME			
STEERING GEAR			
RADIATOR			
MAGNETO			
CARBURETOR			
GOVERNOR			
BATTERY			
STARTING SYSTEM			

TIRE RECORD

MACHINE NO.						
TIRE TYPE						
MAKE						
TIRE NO.						
SIZE						
COST						
DATE BOUGHT						
DATE PUT ON						
WHEEL PUT ON						
DATE TAKEN OFF						
MILEAGE						
GUARANTEE						
GUARANTEE SHORTAGE						
GUARANTEE EXCESS						
REPAIR COST						
SALVAGE						
ADJUSTMENT						
EST. COST A MILE						
ACT. COST A MILE						

TIRE CHANGES

TIRE NO.	FROM TRUCK NO.	WHEEL	FROM TRUCK NO.	WHEEL	MILEAGE

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FIXED CHARGES OR OVERHEAD

	ANNUAL	MONTH	DAY
INTEREST			
% ON $			
INSURANCE			
COMPANY DATE EFFECTIVE DATE EXPIRES			
FIRE			
LIABILITY			
PROPERTY			
TOTAL			
TAXES			
$ ON $1000, DUE			
LICENSE TRUCK, DRIVER			
TRUCK, STATE $ PER HP PER TON			
TRUCK $ PER HP PER TON			
DRIVER, STATE			
DRIVER			
TOTAL			
STORAGE			
SERVICE STATION OR GARAGE AT $ A MONTH			
IF GARAGE IS RENTED INCLUDE			
RENT			
LIGHT			
HEAT			
POWER			
WATER			
TOOL EQUIPMENT			
TOOL EQUIPMENT DEPRECIATION 10% ANNUALLY			
TELEPHONE			
LABOR			
INSURANCE			
TOTAL			

	ANNUAL	MONTH	DAY
IF GARAGE IS OWNED ADD TO ABOVE			
INTEREST ON INVESTMENT			
TAXES			
REPAIRS			
DEPRECIATION (PROPERTY)			
INSURANCE (BUILDING AND CONTENTS)			
TOTAL			
OFFICE COST			
IF RENTED BY TRUCK OWNER INCLUDE			
RENT			
INSURANCE			
LIGHT			
HEAT			
WATER			
STATIONERY			
TELEPHONE			
INTEREST ON FURNITURE INVESTMENT			
DEPRECIATION ON FURNITURE			
INCIDENTALS			
CLERICAL LABOR			
SUPERVISION			
TOTAL			
IF OWNED BY TRUCK OWNER ADD TO ABOVE			
INTEREST ON INVESTMENT (BUILDING)			
TAXES			
INSURANCE (BUILDING)			
REPAIRS			
DEPRECIATION (BUILDING)			
TOTAL			
TOTAL OF ALL OVERHEAD			

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Name Date 19

WORK, TIME, COST and

DATE	DRIVER	OPERATING CONDITIONS		MILEAGE			RECORD OF WORK			
		WEATHER	TEMPERATURE	DAY'S TOTAL	LOADED	LIGHT	LOADS IN	LOADS OUT	DAY'S TRIPS	DEL.-PICKUPS

EARNING RECORD, by MONTHS

with Monthly and Daily Averages from

RECORD OF TIME									FIXED COST—OVERHEAD					
SERVICE TIME	DRIVING TIME	LOADING TIME	UNLOADING TIME	HOURS IDLE	REPAIR TIME	TONNAGE HAULED	LOAD UNITS	INTEREST	TAXES	INSURANCE	STORAGE	LICENSE	OFFICE COST

REPAIR COSTS										COST SUMMARY					REVENUE	
CHASSIS		BODY		ACCIDENT		BATTERY		RENTAL								
PARTS	LABOR	PARTS	LABOR	PARTS	LABOR	VEHICLE	ST-LIGHT		OVERHEAD	OPERATING	REPAIR	TOTAL	EARNINGS	DEPRECIATION EARNED

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OPERATING COST

	GASOLINE		CURRENT		OIL		GREASE		TIRES		DEPRECIA.	WAGES		MISCEL.
	GAL.	COST	KW HRS.	COST	PTS.	COST	LBS.	COST	NEW	REPAIRS	BY MILEAGE	DRIVER	HELPER	
A														
B														
C														
D														
E														
F														

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DRIVER'S WORK RECORD

NAME	DATE	TRUCK NO.	
DRIVER	HELPER		
WEATHER	TEMPERATURE	ROAD CONDITION	
TRUCK CONDITION START		FINISH	
ODOMETER READING: FINISH		MILES LOADED	
START		MILES LIGHT	
DAY'S MILEAGE			
NO. LOADS IN	NO. TRIPS		
NO. LOADS OUT	DELIVERIES OR PICKUPS		
SERVICE TIME	LOADING TIME		
DRIVING TIME	UNLOADING TIME		
HOURS IDLE	TONNAGE HAULED		
REPAIR TIME	LOAD UNITS		
NO. STOPS	TIME DELAYED		
MEAL TIME	CAUSED DELAY		
SUPPLIES USED	TIRE CHANGE		
GASOLINE, GALS.	TIRE NO. ON		
CURRENT KWH	TIRE NO. OFF		
OIL, PINTS	SPEEDOMETER READING		
GREASE LBS	WHEEL: R F L F R R L R		
MIS. EXPENSE	NEW TUBE USED		
REPAIR MADE	ADJUSTMENT MADE		
REPAIR OR ADJUSTMENT NEEDED			
REMARKS			

TRIP RECORD

NO.	FROM	TO	LOAD UNIT	LOAD WEIGHT	TIME HRS.	TIME MIN.	MILEAGE OUT	MILEAGE IN
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

REMARKS

ACCIDENT: TIME PLACE

WITNESSES: NAME RES. TEL. NO.

NAME RES. TEL. NO.

NAME RES. TEL. NO.

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BUZZELL ADVERTISING MANAGER OF UNITED MOTORS.

Announcement has been made by B. G. Koether, chairman of the Motor Equipment Division, United Motors Corporation, Detroit, of the appointment of Jonathan John Buzzell as advertising manager.

Mr. Buzzell is well known in advertising and business circles as the author of "Letters That Make Good" and "Sales Letter Writing," works which are considered standard and authoritative on this subject. He was for three years manager of the advertising and service departments of the Union Paper and Twine Co. of Detroit, previous to which he was for four years manager of a publishing and printing concern in Boston.

J. L. Hardig, formerly advertising manager of the Remy Electric Co., has been appointed assistant advertising manager of the division.

DETROIT TRANSPORTATION ASSOCIATION MOVES.

The Detroit Transportation Association has moved from 97 Fort street to enlarged quarters at 92 Fort street. There are 50 members, who operate 300 motor trucks. All idle trucks are listed and a truck exchange system is operated. The organization is said to be the first of its kind.

DODGE NOW WITH STAR CORUNDUM WHEEL CO.

Edward W. Dodge, formerly sales manager of the Norton Co., Worcester, Mass., is now general sales and works manager of the Star Corundum Wheel Co., Detroit.

The Fisher Automobile Co., Indianapolis, has taken agencies for the Duplex four-wheel drive truck and the Warner special camp trailer.

ITALIAN MOTOR VEHICLE EXPORTS DECREASE.

Exports of Italian motor vehicles showed a falling off for the first six months of last year, compared with the corresponding periods for the two preceding years. From Jan. 1 to June 30, 1918, there were exported a total of 2356 trucks and touring cars, having a total value of approximately $7,000,000, compared with a total of 4148 vehicles in 1917 and 2731 in 1916. The number of touring cars exported during the first six months of 1918 was 728, this constituting a record, for the figures of the two preceding years were 244 and 569 respectively. The decrease was on the trucks, which dropped from the high figure of 3904 for the first half of 1917 to 1628 for the first half of the past year.

Italian imports of motor vehicles were very low during the first half of 1918, the value being about $75,000 for 92 touring cars and one truck. For the corresponding period of 1916 the figures were 178 trucks and nine touring cars.

PEERLESS CANCELS NOTES.

The Peerless Truck and Motor Corporation, Cleveland, O., has paid for and cancelled approximately $2,300,000 of its $5,000,000 of six per cent. convertible notes dated Feb. 10, 1915, and due 1925. The cash in the treasury is equal to the remaining outstanding notes, amounting to about $2,700,000. The company is doing a large business.

EVINRUDE TO ENGAGE IN ENGINE BUILDING.

The Evinrude Motor Co., manufacturer of detachable row boat engines, plans to erect and equip a complete new plant at the northern limits of Milwaukee, Wis. When this is built the company will enlarge its line of production to include crude oil engines in various types.

PENNSYLVANIA STARTS ON BIG ROAD WORK.

The State Highway Department of Pennsylvania has asked for bids for the construction of 50 miles of permanent roads in various sections of the state. This mileage is in addition to the 53 miles for which bids were made a short time previously. Each section is part of one of the arterial highways included in Gov. Sproul's primary system.

This action marks endeavor to give the state the earliest possible benefit of the constitutional amendment voted Nov. 5, 1918, under which $50,000,000 of bonds will be issued to provide funds for improving Pennsylvania's much neglected highways. Instead of building one-way roads, Pennsylvania will double-track its highway system. Bids are soon to be asked for construction of several hundred additional miles of highway.

LUHRS RETIRES FROM GENERAL ALUMINUM.

W. H. Luhrs has severed his connection with the General Aluminum and Brass Manufacturing Co., Detroit. He was general manager and a member of the board of directors.

SPECIAL SCHOOL COURSE FOR BIG TIRE REPAIRS.

The increasing use of big pneumatic truck tires has brought a demand on the part of vulcanizers for information concerning methods of repairing them. As a result the Goodyear Tire and Rubber Co., Akron, O., is adding to its tire repair school a special course in the repair of these big tires.

The National Tool and Manufacturing Co., St. Louis, Mo., will soon enter the market with a ¾ and one-ton truck. The trucks will be assembled jobs.



W. B. Wood, Eastern District Manager, Commerce Motor Car Co.



Maj. Harry Unwin, Manager, Chicago Branch, Reo Motor Car Co.



Birkett L. Williams, Manager Truck Sales Grant Motor Car Corporation.

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BROOKLYN SHOW WILL BE BIGGEST EVER HELD.

The Brooklyn automobile show, in the Twenty-third Regiment Armory, March 29 to April 12, under the auspices of the Brooklyn Motor Vehicle Association, will be the biggest and best ever in Brooklyn. Great enthusiasm was manifested when the drawing for spaces was held at the Long Island Automobile Club.

Both sections, for passenger cars and trucks, will be filled to overflowing with representative makes of passenger cars, trucks, tractors, parts and accessories. Space was allotted to 29 different makers of passenger cars, 23 makers of trucks and about a dozen exhibitors of accessories and parts at the drawing, but since then I. C. Kirkham, director of the show, has received numerous other applications for space and these will be acted upon.

The Brooklyn dealers have assisted the New York dealers in every way possible in making the Manhattan exhibition successful, and New York planned a special Brooklyn day.

The Brooklyn show will contain one of the most interesting passenger car displays ever seen. The show comes at a time when body makers will have had an opportunity to size up the market requirements and lay plans for early spring deliveries.

The truck section will be replete with the very latest types of the builders. One section of the show, which will be unusually interesting this year, will be that devoted to tractors. Every Long Islander will be interested in this particular display.

The following passenger cars will have representation at the Brooklyn show:

Dodge, Ford, Velie, King, Winton, Daniels 8, Chevrolet, Oldsmobile, Peerless & Nash, Lexington, Haynes, Scripps-Booth, Packard, Studebaker, Cadillac, Maxwell, Chalmers, Chandler, Cole, Hupmobile, Marmon, C. J. Maxson, whose car will be announced later; Buick, Liberty, Standard 8, Locomobile, Oakland, Willys-Knight, Overland, Hudson, Essex, Franklin, Stutz, National, Reo.

The trucks to be shown will include the Signal, Service, Oldsmobile, Oneida, Sanford, Fulton, Autocar, Acme, Overland, Maxwell, Globe, Chevrolet, Nash, Peerless, Packard, Columbia, Day-Elder, Selden, Riker, Locomobile, Dodge, Hall, Reo and Rainier.

In the accessories division there will be a considerable number of exhibitors.

ROAD BUILDERS CONSIDER NEEDS OF MOTOR TRUCK.

At the 16th annual convention of the American Road Builders' Association in New York City it was agreed that roads must be built with due regard to the wear caused by heavy automobile traffic, especially motor trucks. It was the consensus of opinion that not only the main highways, but also connecting roads must be built so as to endure heavy vehicle traffic.

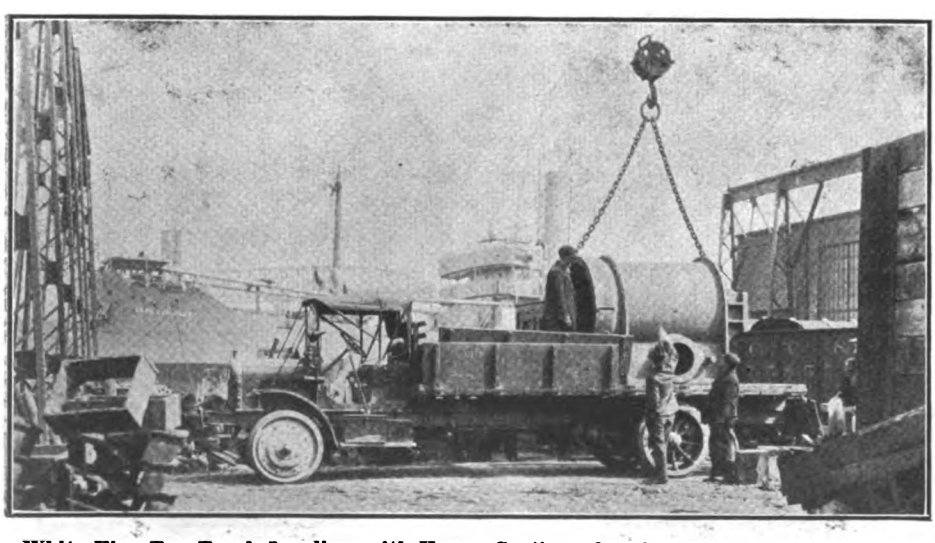
Secretary of State Francis M. Hugo said that it was with a full realization of the importance of the motor truck that appropriations covering road construction were made. He declared that 90 per cent. of the increase in 1918 registrations in New York state was due to the increase in the number of commercial vehicles.

DO YOU WANT TO MAKE TEST OF FABRIKOID?

A little piece of literature describing a new auto truck upholstering material has been issued by the Du Pont Fabrikoid Co., Wilmington, Del. The company offers to send a sample of the material, large enough to upholster one truck seat, to any manufacturer, upholsterer or truck owner who would like to give the material a trial.

The manufacturer claims that the material is very strong, durable and attractive, being made for heavy duty. It is said to be water proof.

The Simpson Truck Co., St. Louis, has changed its name to the Victory Truck Co., and has increased its capital stock from $50,000 to $100,000.



White Five-Ton Truck Loading with Heavy Castings for the American Shipbuilding Corporation, Yard at Lorain, O. Returning, These Trucks Hauled Forgings to the Shops in Cleveland.

PACKARD TO HIRE BACK ARMY AND NAVY MEN.

Alvan Macauley, president and general manager of the Packard Motor Car Co., announces the company's policy regarding employment of former employees discharged from the army and navy as follows:

"An employee who left to enter government service and who has been honorably discharged, shall receive preference over other applicants for any vacancy which he may be competent to fill. Whenever possible Packard employees honorably discharged from uniformed service will be assigned to their former positions or to work equally remunerative.

"If they are not able to resume their former occupation, every effort is to be made to place them in accordance with their present ability.

"To facilitate the operation of this rule department heads are authorized to replace whenever necessary employees who have entered Packard service since April 6, 1917. Applications for re-employment from employees who entered salaried civilian positions under the government will be considered on their merits, and every effort will be made to provide employment if a suitable vacancy exists.

"To receive consideration under these rules an employee must have entered the government service within 30 days of leaving Packard employ, and must make application for re-employment within 60 days of his discharge. In administering these rules, employees who have served under the governments of any of the Allied nations will rank equally with those who have been in United States service. Absence in government service will not be deducted in determining length of service in Packard employ."

PRATT IS FISK SPECIAL REPRESENTATIVE.

Claude Pratt has become a special factory representative for the Fisk Rubber Co., Chicopee Falls, Mass., to which position he was promoted from the management of the central district. He will continue to have headquarters at the Chicago branch. Joseph P. Ripley, who has been in charge of the Washington office, succeeds him.

Huffman Bros. Motor Co. has been organized in Wilmington, Del., with a capital of $1,000,000, to manufacture automobiles of all kinds.

R. M. Wade & Co., tractor dealer of Portland, Ore., recently opened Ford sales rooms at 902 North Monroe street, Spokane, Wash.

M. Frankel has been promoted to assistant sales manager of the Chicago office of the Roller-Smith Co., maker of electrical instruments.

The Battery and Starter Co., Inc., Buffalo, N. Y., has asked permission to increase its capital from $10,000 to $20,000.

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THREE SIZES OF TRIANGLE TRUCKS.

TRIANGLE trucks are marketed in New England by the Triangle Motor Truck Sales, a concern controlled by the members of the Eugene F. Lally & Sons Co., which is located at 94 Massachusetts avenue, Cambridge, Mass. The Lally company is well established and is widely known, having been engaged in the vehicle industry for a considerable period.

Sales rooms have been opened at the address stated and a service station has been equipped, so that the concern is prepared to offer to purchasers standard owners' service. It also has in stock all repair parts that might be required for restoration or overhaul.

The Triangle Motor Truck Co., St. Johns, Mich., has been actively engaged in truck manufacture for a considerable period and the greater part of its production has been marketed in the Middle West. Recently the company inaugurated an intensive sales campaign and greatly extended its organization, and made contract with the Triangle Motor Truck Sales to represent it in New England.

The company is now producing a series of three trucks having load capacities of 1500, 3000 and 5000 pounds, and of these the smallest machine is the most recent product. The first chassis was rated at 3000 pounds, the second at 5000 and the third was designed to meet a demand for a comparatively light and fast machine suited for general purposes.

The 1500-Pound Chassis.

These trucks are constructed of high grade construction units that are regarded as standard by the industry and are as well known to the users and drivers of trucks. The 1500-pound chassis has a unit power plant that consists of a Herschell-Spillman four-cylinder engine combined with a Borg & Beck dry plate clutch and a Mechanics Gear and Machine transmission gearset. The engine is four-cylinder, cast en bloc, having cylinder bore of 3¼ inches and stroke of five inches, rating at 16.90 horsepower by the S. A. E. formula. The engine is adapted for installing starting and lighting equipment as an extra. The cooling system includes a Perfex radiator, through which the water is circulated by thermo-syphon action, and a 16-inch fan driven by a belt. The lubrication is by a forced feed system. The equipment includes an Eisemann high-tension magneto and a Stromberg carburetor.

The clutch requires no lubrication and is practically self-adjusting for wear and the transmission gearset is a selective sliding gear type having three forward speed ratios and reverse. The drive is through a main shaft to a Clark internal gear rear axle. The front axle is a Torbensen. The frame is a rolled steel channel section four inches wide, with deep flanges, strongly reinforced and braced. This is carried on semi-elliptic springs, the forward set being 42 inches long and two inches wide and the rear set 54 inches long and 2¼ inches wide. The spring eyes are bronze bushed and adequately lubricated. The drive and torque stresses are taken by the springs. The wheelbase is 118 inches, and the tread 56 inches. The loading space back of the driver's seat is 90 inches length.

The wheels are wood, artillery type, equipped with 32 by 4½-inch pneumatic tires. The steering gear is a Gemmer construction, and is at the left side. The fuel tank is under the cowl.

The 3000-Pound Chassis.

The 3000-pound chassis has a unit power plant of a Waukesha four-cylinder engine, a Fuller multiple dry disc clutch and a Fuller transmission gearset, the latter being a sliding gear type having three forward speed ratios and reverse. The engine cylinders are cast en bloc. The cylinder bore is 3¾ inches and the stroke 5¼ inches, rating at 22.50 horsepower by the S. A. E. formula and is claimed by the maker to develop 35 horsepower. The engine is cooled by a circulation of water forced through the cylinder jackets and a Perfex radiator by a centrifugal pump. The lubricating system is a constant level automatic splash. The engine is equipped with a Waukesha governor, an Eisemann magneto and a Stromberg carburetor.

The power transmission includes a tubular shaft in two sections with three universal joints, the rear end of the forward section being mounted in an SKF self-aligning ball bearing. The rear axle is a Clark internal gear construction, the bearings being Hyatt roller, Bower roller, New Departure ball and SKF self-aligning ball bearings, the last being thrust type on either side of the differential gearset. The differential gearset is the M & M self-locking type, insuring positive traction with either wheel.

Other Chassis Details.

The front axle is a Torbensen unit, an I section equipped with taper roller bearings. The frame is heavy channel section steel six inches width, with wide webs, well reinforced and braced. This is mounted on semi-elliptic springs, the forward set being 42¾ inches long and 2¼ inches wide, and the rear set 54 inches long and 2½ inches wide. The spring eyes are bronze bushed and the nickel steel spring bolts are fitted with oilers. The wheels are wood, artillery type, with 14 two-inch spokes, and these are shod with solid tires, 34 by 3½ inches front and 34 by six inches rear. The wheelbase is 144 inches and the tread 56 inches. The loading space is 126 inches.

The steering gear is a Gemmer semi-irreversible type and is at the left side. The service brake is an external contracting type located on the drive shaft at the rear end of the forward section of the shaft. The drum is 10 inches diameter and four inches width. The emergency brake is external contracting on drums 16 inches diameter and two inches wide on each of the rear wheels. The 17-gallon fuel tank is under the dash cowl. The chassis is equipped with driver's seat, fenders, running boards, hub odometer, tool kit, jack, mechanical horn, oil dash and tail lamp and license plate bracket.

The 5000-Pound Chassis.

The 5000-pound chassis has a Rutenber engine combined with a Fuller multiple dry disc clutch and a Fuller transmission gearset, having four forward speed ratios that is located amidships. The engine is a four-cylinder type with cylinder bore of 4⅛ inches and stroke of 5½ inches, rated by the S. A. E. formula at 27.25 horsepower. The engine is cooled by a centrifugal pump and a Perfex radiator and the usual fan. It is equipped with an Eisemann high tension magneto, a Stromberg carburetor and a Pierce governor.

The drive is by a tubular shaft with Universal Products universal joints to a Clark internal gear rear axle. The front axle is an I section drop forging from special steel. The frame is heavy and is suspended on semi-elliptic Detroit springs. The wheels are wood, artillery type, shod with 34 by six-inch tires forward and 36 by seven-inch rear. The wheelbase is 151 inches. The steering gear is a Gemmer semi-irreversible type, and is at the left side. The chassis is designed to carry 60 per cent. of the load on the rear axle.

AUTOS KILL 1189 IN YEAR IN NEW YORK STATE.

There were approximately 30 per cent. more automobile fatalities in New York state in 1918 than in 1917, according to figures made public by Col. Edward S. Cornell of the National Highways Protective Society. Revised figures show that in 1918 there were 1189 persons killed by automobiles in that state, and 837 in 1917.

Forty-nine persons were killed by automobiles, eight by trolleys and one by a wagon in New York City during the month of January. In New York state, outside of the city, in the same period, automobiles caused the deaths of 19, trolleys three. This record of 68 killed by automobiles is the greatest ever recorded for the month of January.

In New Jersey 17 were killed by automobiles, four by trolleys and two by wagons in January. Six persons were killed at grade crossings in New York and four in New Jersey.

G. W. Werden is now export manager of the Denby Motor Truck Co., Detroit, Mich. His headquarters will be in New York City.

COUPLE-GEAR BOSTON AGENCY.

The sales room and service station of the Couple-Gear Electric Truck Co., the New England agent of the Couple-Gear Freight Wheel Co., are at 179 South First street, South Boston, where a sales room display will be made of Couple-Gear trucks during the week of the Boston automobile show.

PACKARD PROTECTS BUYERS.

Announcement is made by the Packard Motor Car Co. that it will protect all its customers against a drop in prices.

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WEST VIRGINIA ADOPTS LIBERAL HIGHWAY PLAN.

The West Virginia Legislature has adopted unanimously an amendment to the constitution authorizing a definite system of state roads and highways connecting the county seats and to be under the control of such state officers as may be prescribed. The amendment also authorizes the issuance of state bonds not to exceed $50,000,000 outstanding at any one time for road construction and maintenance.

The act is the result of a vigorous road campaign conducted during the last five years. At the same time the Legislature passed unanimously a provision reestablishing the road school at the university, and requiring the road commission to be members of national organizations for the purpose of bringing into the state the best thought of all other sections.

A. D. Williams, president of the Southern Appalachian Good Roads Association and the former highway commissioner of the state, says:

"West Virginia, with her unsurpassed scenery, girdled by a good system of roads such as is now assured, because the people of the state will undoubtedly ratify the amendment, will be one of the most attractive sections for tourists; her resources are known, but her problem in the past has been means of communication and transportation."

WELLMAN-SEAVER-MORGAN CO. TO ERECT ADDITION.

The Well-Man-Seaver-Morgan Co., Cleveland and Akron, O., manufacturer of rubber, machinery and general mechanical equipment, has awarded the contract for the erection of a four-story addition to its factory and office buildings in Akron. The addition will be 28 by 68 feet and will cost $80,000.

Gustave Huette, Sheboygan, Wis., has retired from the Falls Motors Corporation, Sheboygan Falls, of which he was founder and for many years president.

MOTOR TRUCKS HAUL NEW ARMY SEARCHLIGHTS.

A new searchlight which will be exceedingly useful in connection with anti-aircraft operations, has been developed by army engineers. The searchlights have been mounted on a car which runs on rubber wheels and by means of a motor truck are conveyed great distances with the least possible loss of time.

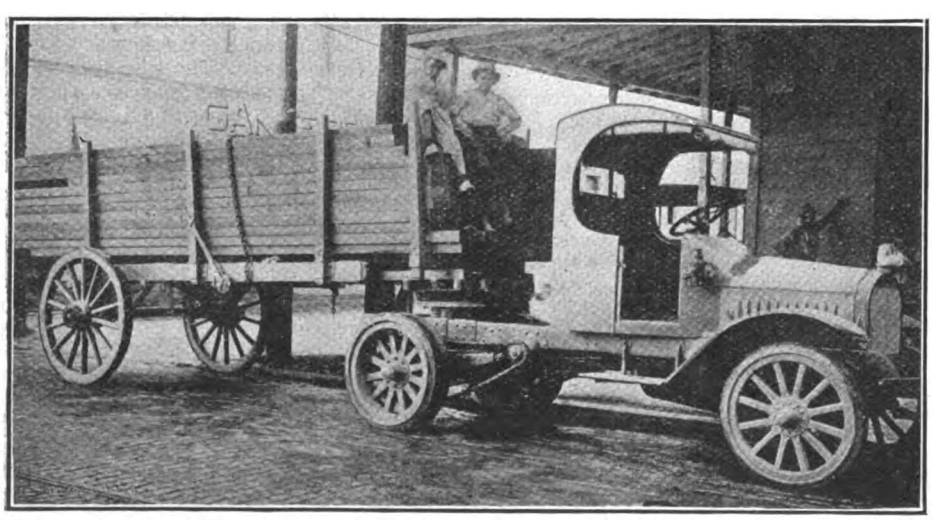
The first light developed was 24 inches in diameter, then came a 36-inch light and finally a 60-inch light of the "dish-pan" type, which, as its name implies, is shaped like a dishpan and consists simply of a mirror and its support. A 60-inch light formerly weighed 6000 pounds, but the experts have succeeded in reducing the weight to less than 700 pounds, thus making the light much more portable.

The cost of the new light has been reduced to about one-fourth of the cost of the first product and the facilities for manufacturing it have been greatly increased. Many interesting experiments are now in progress. The old searchlight had a glass mirror which was very heavy and could be produced only by a few firms. One part of the development has been to perfect a mirror of a thin metal backed with reenforced concrete which promises excellent results. The change would enable a dozen, instead of two or three, firms to produce the mirrors. The range of the light has been increased from 8000 yards under best conditions to 13,000 yards, and those who have studied the new light believe that an even better range will be produced.

SONNEBORN OUT OF ARMY.

Following his release from the radio school at Penn Field, Tex., where he was an instructor, A. B. Sonneborn, sales engineer, has resumed his position as representative in Detroit for the Federal Machine and Welder Co., Warren, O.

The business of the C. R. Wilson Body Co., Detroit, for January exceeded $600,000. There are orders for 63,000 bodies for this year already on the books.



Mack AB Tractor and a Semi-Trailer Loaded with 6½ Tons of Pine Lumber, Used in the Yard and Service of Gancedo Toca & Co., Havana, Cuba.

NEW YORK TRUCK OWNERS OPPOSE MANY BILLS.

One of the most representative gatherings of motorists ever held at Albany, N. Y., took place March 4, when 91 local clubs out of a total of 121 clubs composing the State Automobile Association sent delegates to the hearing on automobile legislation in the Capitol. Representatives of the Motor Club of America, State Automobile Association, Automobile Club of America and Automobile Manufacturers' Association protested against bills they thought unfair.

As a result, a large list of bills of discriminatory character aimed at automobile owners and drivers were unfavorably reported by committees. About the only legislation which will likely be favorably reported will include equipment of motor trucks with mirrors and requiring the transfer of registration certificate with sale of car.

Such measures as $5000 bond bills, illuminated number plates, automobile commissions, etc., were all successfully opposed by the organizations mentioned.

The first of the two approved measures is designed to facilitate the passage of passenger cars around motor trucks on the highways and to eliminate the usual excuse of truck drivers that they did not hear the signals and could not see cars approaching from the rear.

The bill requiring the transfer of certificate of registration of car when sold will not prevent theft of the car, but it will make it more difficult for thieves to dispose of stolen cars and will protect honest dealers from the imposition of thieves.

The bill to increase license fees of automobiles has not yet made its appearance.

The New York State Automobile Association has taken the position that the association will vigorously oppose any increase in license fees until all automobile moneys are devoted exclusively to the roads of the state.

DIXON'S 677 HELPS TO DEFEAT HUN IN ARGONNE DRIVE.

A salesman of the Joseph Dixon Crucible Co., Jersey City, received this letter from a soldier friend:

"You will be interested to know that back in the Argonne drive we were short on grease for the shells. Our supply sergeant found a can (25 pounds) of Dixon's 677 and we used it all the way through to our last position on the right of the town of Apremonte. When you consider the fact that in our first position alone our battery fired over 4500 rounds and in moving up took six different positions, and in each position firing anywhere from 500 to 15,000 rounds, you will know that your grease played a prominent part in pushing back Fritz."

H. W. Clark has become associated with the Chicago Pneumatic Tool Co. as manager of advertising. He was formerly in the advertising service department of the McGraw-Hill Publishing Co. in Chicago.

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FISK SOLID TIRES

—dependable

TRUCKS can't afford to lose time.

Minutes count in the delivery of merchandise.

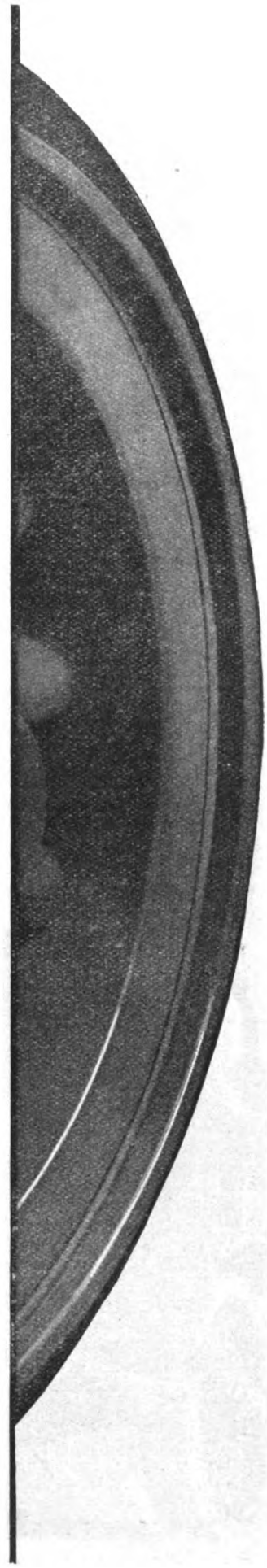
Good tires prevent delays.

Dependable tires are built to wear, and meet the rugged conditions encountered in actual use.

Fisk Solids are dependable—you buy them with confident knowledge that you are making a wise and permanent investment.

THE FISK RUBBER CO.
OF N. Y.

Chicopee Falls, Mass.



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THE MOTOR TRUCK
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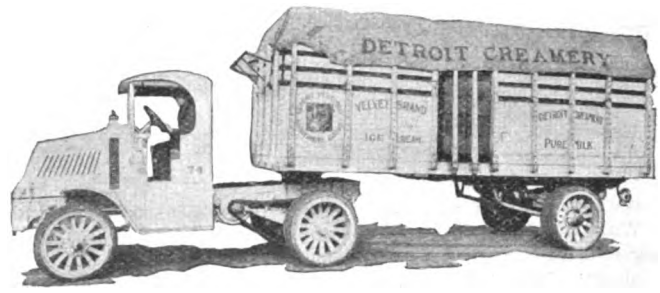
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A PROFITABLE AND PERMANENT BUSINESS

The Detroit Creamery Co. unit, shown above, is hauling milk at an average cost of 2 1-2 cents per ton mile.

THE Fruehauf Semi-Trailer agency offers distributors a most unusual business opportunity.

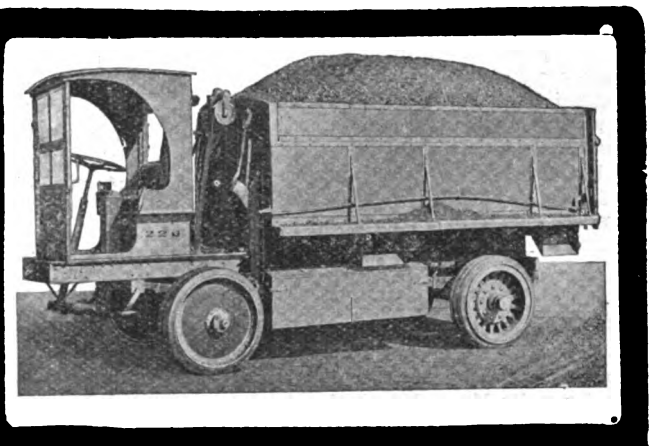
With the demand for Fruehauf Trailers increasing—because Fruehauf units have conclusively demonstrated that they do lower ton-mile costs 50 to 70 per cent.—our dealers in all sections are building a profitable and permanent business.

We are in position to negotiate with a few responsible distributors, as a result of increased production—and to established dealers in open territory we can offer a most attractive contract. Write for details.

Fruehauf Trailer Co.
1304 Gratiot Ave., Detroit, Mich.

FRUEHAUF TRAILERS





COUPLE-GEAR

Trucks are economical for heavy haulage in traffic because there is no waste of fuel or lubricant, there is no grinding out of tires, and the elasticity of electric current means minimum mechanical wear.

Heavy haulage is costly because there is large consumption of gasoline and oil, the depreciation is high and maintenance expense is maximum.

Only two or four moving wheels and two or four motors in Couple Gear trucks means the acme of simplicity and minimum expense. Besides, you can teach your horse driver to operate an electric truck efficiently in a half day.

Economy, not expense, is what you want. Full information of the latest types of Couple Gear trucks at request.

There's a size to meet any requirement.

Couple-Gear Freight Wheel Co.
GRAND RAPIDS, MICH.

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GREAT SOUTHERN AUTOMOBILE SHOW AND EXPOSITION.

The Great Southern Automobile Show and Exposition will be held at Bristol, Va., for one week, beginning May 10, instead of April 13, as formerly planned. Manager G. W. Roberts announces that the War Department has arranged for flying exhibitions in army planes during the show. The Curtiss Aeroplane Co. will fly one of its big planes to Bristol, and the Aircraft Engineering Corps will also give exhibitions.

Sixty jobbers will hold a "Merchants' Week" in connection with the show and will rebate the fares of some 4000 merchants who buy in Bristol.

One day of the show will be given over to a meeting of the southern automobile and garage men, who will form an association. One day will be for the farmers, another for a southern good roads meeting and one for the merchants.

The Tennessee Legislature is about to authorize the issue of $50,000,000 worth of bonds for permanent highways, three of which will run from Bristol.

INCOME TAX RULINGS ON FARM TRUCKS.

The Internal Revenue Bureau has ruled that the cost of farm machinery represents a capital investment and is now an allowable deduction as an item of expense. The purchase price of an automobile, even when used entirely in carrying on farm operations, similarly is not deductible. The cost of gasoline, repairs and upkeep of an automobile truck or passenger car, if used entirely for farm business, is deductible as an expense. If used partly for business and partly for pleasure or convenience, the taxpayer should determine to what extent it is used for each, and deduct only that part charged to business purposes.

THOMPSON JOINS REPUBLIC TRUCK SERVICE.

Loyal E. Thompson has become assistant manager of the service department of the Republic Motor Truck Co., Inc., at the factory in Alma, Mich. He was formerly connected with the service department of the Cadillac Motor Car Co.

National Campaign for Good Roads Urges Kissel

Discussing "Good Roads as a National Asset," G. A. Kissel, president of the Kissel Motor Car Co., said:

"Apparently in many sections of the country road building has not been taken seriously, although Congress has appropriated $48,500,000 to assist the states in building local good roads. According to a report recently made public by the Department of Labor, while the government has approved 760 projects embracing 7869 miles, less than 45 miles of highways have been constructed under the Federal aid plan.

"Imagine less than 45 miles, when 45,000 miles would be little enough! And mind you the expense of this road building to the states would not be prohibitive because the Federal appropriations would cover one-half.

"Notwithstanding the way the people of Illinois were sold on the Illinois road bond campaign for $60,000,000, proving that the public wants to be sold on a campaign of this character, only eight states have proposed bond issues based on this plan.

"To my mind, it is just as vital to the country's welfare for the thousands of patriotic workers to put over the different Liberty Loan Bond, War Savings Stamps and Red Cross campaigns, to concentrate their splendid organization on putting good roads 'over the top.' In fact, it is one of the most logical accomplishments that such an organization in peace time should first turn to. We should not let this wonderful sales organization, created by the need of war, and so perfected that each individual drive was worked out and carried to a successful conclusion in the most systematic and business like manner, to die or disintegrate, because there are too many patriotic and community problems that should be solved.

"Speak to any business man, whether manufacturer, retailer, industrial executive or banker, and he will agree with you that the one big thing that should be accomplished for the good of the entire nation is that of bringing to the highest state of perfection the thousands upon thousands of highways and byways, turning the poor roads into good roads, so that not only will motor truck transportation become more scientific than it is now, but greatly facilitate the transportation of goods and supplies, as well as reduce the expense of transporting them from point to point."



Two Denby Five-Ton Chassis Used as Tractors with Semi-Trailers, Used for Hauling Heavy Logs by a California Lumber Company.

KELLY-SPRINGFIELD TIRE MAY INCREASE CAPITAL.

A special meeting of the stockholders of the Kelly-Springfield Tire Co. has been called for March 31 to pass on a proposal to increase the capital of the company from $5,029,000 to $10,000,000.

Van H. Cartmell, president of the company, says that it is inadvisable at present to increase the cash disbursements on the common stock, but that it is proposed, if the capital increase is allowed, to pay, beginning May 1, a quarterly three per cent. stock dividend on the common stock in addition to the regular quarterly cash dividend of $1 a share.

At the meeting the stockholders will be asked to authorize a decrease in the company's preferred stock from $8,900,300 par value, the present amount, to $3,900,300. The decrease represents 900 shares of preferred stock purchased by the company for its special surplus account and duly cancelled.

TO MAKE STATE EFFICIENT FOR MOTOR TRUCKS.

The State of Minnesota is preparing a road building program that will involve the expenditure of more than $6,000,000 in the next 12 months. Commissioner of Highways Babcock says that the war demonstrated the value of motor trucks for freight transportation, and in his plans for better roads he will act with the object of making Minnesota one of the most efficient states in the Union for the use of motor trucks.

ASSOCIATED ADVERTISING CLUBS.

The executive offices of the Associated Advertising Clubs of the World are now located at 110 West 40th street, New York City. P. S. Florea, executive manager, announces that the removal is in connection with the adoption of the biggest program in the organization's history.

AUTO TRADE BUYING STEEL.

The activity in the steel market has been augmented recently by the purchases of the automobile trade. More than 90 per cent. of the business being done at the mills is said to be in sheets for the automobile industry.

STUTZ PROFITS.

Net profits of the Stutz Motor Car Co. of America for the year ended Dec. 31, 1918, totaled $594,047, equal to $7.92 a share, 75,000 shares, no par value, outstanding. This is before Federal taxes have been deducted.

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The Steering Gear *and* its Importance

ROSS GEARS

WHILE the steering gear is far from being the most expensive unit in the truck, most engineers will agree that it is one of the most important.

Considering the element of safety, there is no other part upon which so much dependence must be placed. Every minute that it is in operation, the *safety* of the truck and its load depends largely upon the *steering gear.*

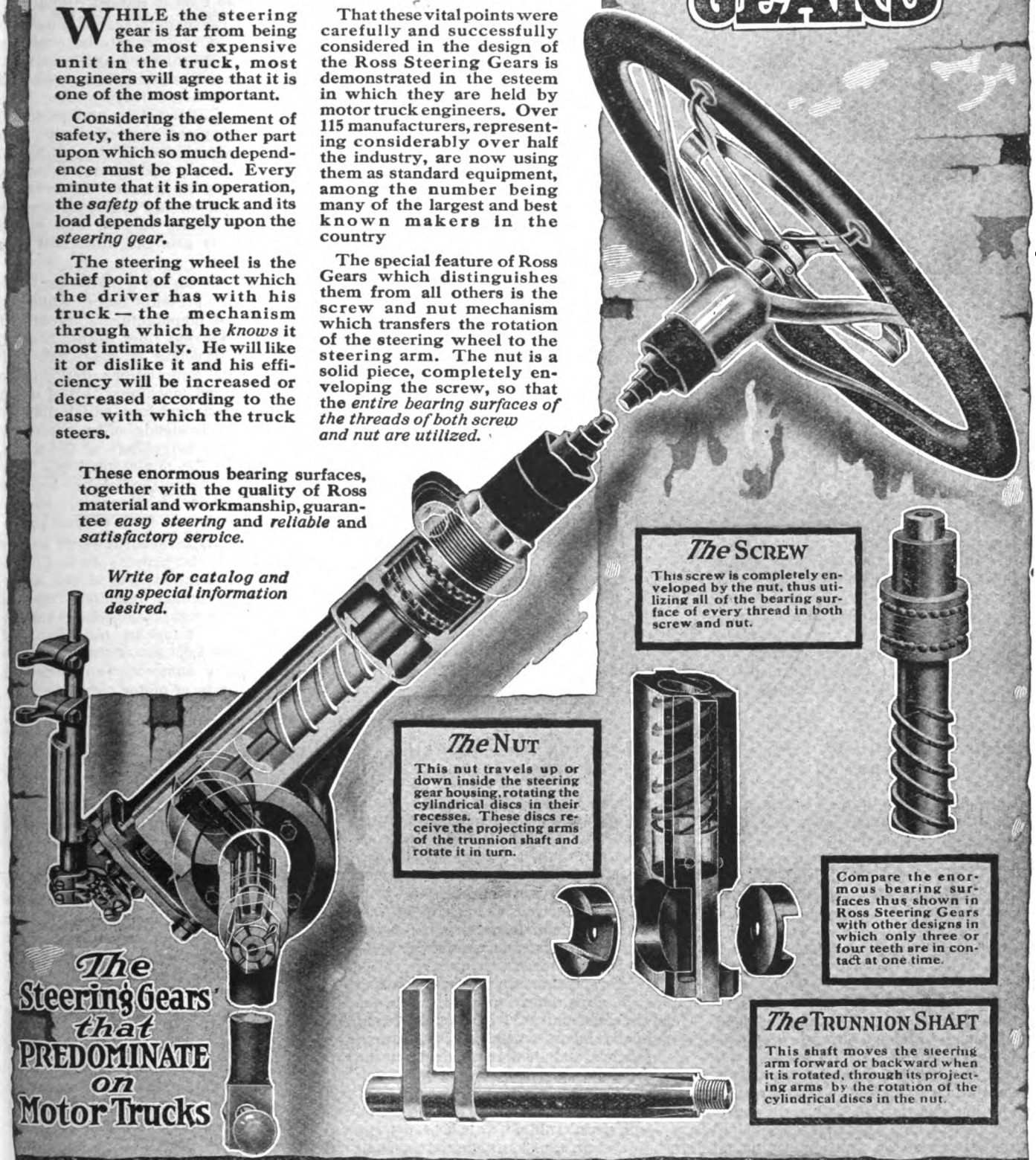
The steering wheel is the chief point of contact which the driver has with his truck — the mechanism through which he *knows* it most intimately. He will like it or dislike it and his efficiency will be increased or decreased according to the ease with which the truck steers.

That these vital points were carefully and successfully considered in the design of the Ross Steering Gears is demonstrated in the esteem in which they are held by motor truck engineers. Over 115 manufacturers, representing considerably over half the industry, are now using them as standard equipment, among the number being many of the largest and best known makers in the country

The special feature of Ross Gears which distinguishes them from all others is the screw and nut mechanism which transfers the rotation of the steering wheel to the steering arm. The nut is a solid piece, completely enveloping the screw, so that the *entire bearing surfaces of the threads of both screw and nut are utilized.*

These enormous bearing surfaces, together with the quality of Ross material and workmanship, guarantee *easy steering* and *reliable* and *satisfactory service.*

Write for catalog and any special information desired.



The Screw

This screw is completely enveloped by the nut, thus utilizing all of the bearing surface of every thread in both screw and nut.

The Nut

This nut travels up or down inside the steering gear housing, rotating the cylindrical discs in their recesses. These discs receive the projecting arms of the trunnion shaft and rotate it in turn.

Compare the enormous bearing surfaces thus shown in Ross Steering Gears with other designs in which only three or four teeth are in contact at one time.

The Trunnion Shaft

This shaft moves the steering arm forward or backward when it is rotated, through its projecting arms by the rotation of the cylindrical discs in the nut.

The Steering Gears *that* PREDOMINATE *on* Motor Trucks

ROSS GEAR & TOOL COMPANY, 790 Heath St., Lafayette, Ind.

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MAGNITUDE OF AUTOMOTIVE INDUSTRY

WITH practically 6,000,000 automobiles of all descriptions in use in the United States, and assurance that 1919 will prove a record breaker, this country probably will spend approximately $10,000,000 either directly or indirectly in connection with the motor car industry this year.

According to a recent report there are 230 manufacturers of passenger automobiles and 372 makes of trucks in 32 states, with a capital of $736,000,000 and employing 280,000 workers at the annual wage of $275,000,000. The report also shows that there are 1080 manufacturers of bodies, parts and accessories, with a capital of $336,000,000 and employing 320,000 workers and paying $228,000,000 annually in wages.

There are about 27,800 automobile dealers, located in nearly every town, having a capital investment of $184,000,000 and employing 230,000 persons.

Ninety-four per cent. of the cars used in this country are of American make. The motor cars owned in the United States aggregate a present value of nearly $5,000,000,000. There was $917,470,938 spent on the purchase of new cars by American motorists last year, and to this sum is to be added the value of the accessories.

Growth of Tire Manufacturing.

Tire manufacturing is becoming almost as large as the motor car building trade itself. Last year 18,000,000 tires, valued at $450,000,000, were made.

Next to the cost of tires is that of gasoline and lubricating oils. Besides this, the cost of repairs, renovations and periodical overhauls amounts to many millions, and, adding to this the sum of the annual registration and license fees (reaching $25,000,000 so far this year), the total expenditure would exceed $35,000,000.

Approximately $80,000,000 was expended for highway improvement last year by the several states and largely for the benefit of motoring.

Public garages number 25,500, and the cost of this service aggregates a vast sum, although perhaps the heaviest expense is in looking after the driving and care of the cars, the need of which has opened a new calling of great extent. The professional drivers licensed in this country during 1911 were nearly 15,000, and since that time the number has increased two fold. If the wages of this number were fixed at $15 per week and the compensation of others employed about the car were added, the total would reach upward of $5,000,000 annually.

Great Volume of Indirect Expense.

These figures cover only the direct expenditures on cars and do not take into account the moneys spent indirectly in connection with motoring, such as the cost of suitable clothing, hotel and traveling expenses while touring, which add several millions to the total amount.

The spending of this money benefits directly or indirectly a great number of persons, especially the industrial classes. The average of direct labor upon the car is small, but this does not by any means cover the entire cost to the manufacturer, as it only covers the labor employed upon the construction in the factories.

There are, in addition to the items of rent and taxes, the heating, lighting and power, the wages of the skilled and unskilled labor throughout the works, the salaries of the managers and the staff of supervisors, the highly skilled draftsmen, testing staffs and the clerical assistants who deal with the supplies and keep track of the work.

How the Cost Is Passed Along.

Moreover, the manufacturers' purchases are high in the way of material, which is not raw, but the finished and partly finished product of other trades. When a machine is finished still more labor is required for its distribution and sale, and there is a large staff of clerks in the commercial departments of the different firms, managers, travelers and salesmen, and thousands of agencies all over the country and in foreign lands, all employing labor in taking care of and selling cars. There is also the important item of depreciation.

Over half the cost of a motor car, from first to last, represents labor, while the balance is not manufacturers' profit, but such items as rent, fuel, light, heating, advertising, traveling expenses, office expenses, agents' commissions, depreciation of the plant and machinery, all of which represents profit and loss, which must be distributed in dividends, often representing but a slight percentage of the whole, while even in the numerous items mentioned as making up the balance between the cost of labor, an appreciable amount goes to labor in one form or another.

Taking all the expenditures of owners of motor cars, the benefits to the industrial classes must exceed in the aggregate a billion dollars annually. Upward of 2,000,000 persons obtain their employment by the automobile industry, and something like 5,000,000 of the population are directly or indirectly supported by the manufacture of motor cars.

BATTERY IN AIRPLANE WORKS UPSIDE DOWN.

It is not generally known that the one type of airplane which used a storage battery and generator for ignition purposes was equipped with a battery which naturally had to function upside down as well as right side up. The storage battery of the type in an automobile would lose all its electrolyte if it were turned upside down, so engineers had to design a new type of battery for the plane, though practically every make of plane but this one was fitted with a magneto, still the special battery had to be designed.

The magneto which Europe recognizes as the only reliable ignition medium was in such demand during the war that there was not a factory either on the other side or here but was working full speed ahead.

Few realize how absolutely dependent the nations were on ignition equipment and as the Allies, users of magnetos exclusively in preference to battery ignition, formerly went to the enemy countries for their magnetos they had unfortunately neglected home production. Now, however, the Allies have their own magneto plants supplying the trade. De Dion and Fiat made their own magnetos.

STUDEBAKER BALANCE SHEET SHOWS AMPLE RESOURCES.

President A. R. Erskine of the Studebaker Corporation, in submitting the balance sheet as of Oct. 1, 1918, and comparing it with Jan. 1, 1918, said:

"Net sales for nine months ending Oct. 1 of last year were $35,611,058, from which were derived $3,212,470 of net profits after usual deductions for depreciation and interest and reserve of $405,687 for Federal taxes.

"The corporation is without a stock of finished automobiles on hand, as inventory included but 1423 cars of all kinds, practically all of which were in transit to branches and dealers throughout the world, under contract for sale, but not delivered.

"Out of proceeds of $15,000,000 seven per cent. serial gold notes just issued, the corporation on Jan. 3 anticipated payment of practically all of its outstanding bank loans, which then amounted to $9,525,000, and invested the remainder of the money in short term interest bearing deposits and 4½ per cent. United States certificates of indebtedness until such time as it is needed in construction work at South Bend, where a new, modern automobile plant is being erected. Present bank balance of the corporation exceeds $3,500,000."

PROTECTING DRIVERS BENEFITS TRUCK OWNERS.

Clifford A. Williams, director of sales of the Kissel Motor Car Co., says that the necessity of continuous motor truck transportation during the war brought forth many important innovations that will revolutionize overland transportation schedules during the reconstruction period. Among these innovations, the object of which is to keep the motor truck wheels turning throughout the year, is that of Kissel's All-Year Cab. Mr. Williams points out that truck owners realize that by giving their drivers protection they are in reality protecting their trucks and their loads.

TO DISTRIBUTE CLEVELAND TRACTOR.

The Hoosier Tractor Co. has opened a sales room at the point of Capitol and Indiana avenues, Indianapolis, to distribute Cleveland tractors. A. C. Webb is president and general manager.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 4. PAWTUCKET, R. I. APRIL, 1919.

HOW WILL GOVERNMENT ABSORB ARMY TRUCKS AND CARS?

Post Office Department Could Utilize Largest Number, But Lacks Appropriation—Development of Rural Express and Use in Highway Building Are Possibilities.

HOW can the United States government best dispose of the thousands of trucks and cars built for and delivered to the War Department, intended for army service, that are no longer required?

By the phrase "best dispose of" is meant what will from all angles least influence the activities of the power vehicle industry and result in the smallest loss to the government through shrinkage of values, and at the same time directly benefit the nation.

Seemingly this condition has been determined tentatively by the statement made by the War Department: That it will transfer to other governmental departments what vehicles can be used by them; that those remaining will be first offered to the concerns that manufactured them; that these companies may acquire them and distribute them through their branches and agencies, and that those not absorbed in this manner will be sold.

According to the War Department the trucks and cars will be disposed of by the director of sales of that division. Statement has also been made that a survey is now progressing to determine the number, capacities, equipment, condition of these vehicles and other general information, and that each department of the government has been requested to submit requisitions for what machines can be used by it, so that the director of sales will be able to classify and value all vehicles with the purpose of submitting facts to the manufacturers and, in all probability, to the public.

No statement has been made by the War Department how its trucks and cars will be disposed of.

After all departmental needs have been supplied the remainder will be offered to the manufacturers.

While the War Department assumedly has made progress with the preparation of record, and probably has knowledge of the approximate number of vehicles in its custody, the power vehicle industry and the people have practically no information of the classes and number of each class of machine.

Value of Public Information.

There are those who may assume that dissemination of facts would serve no useful purpose and might greatly influence the eventual disposal of the machines in the possession of the government. There are others who believe that the fullest publicity should be given of the number and classes of vehicles as soon as this information has been obtained.

Statement is made by those who are assumed to have some knowledge that the government can make use of all trucks and cars now owned save perhaps 10,000, and there is reason to believe that these can be absorbed by the manufacturers so that comparatively few, if any, will be sold directly to the public.

The trucks and cars shipped to France and used by the various branches of the American Expeditionary Force will, according to statement of departmental policy, be sold to other nations, concerns or individuals. There is understanding that these will not be brought back to the United States. This being so the War Department's survey and appraisal is of machines delivered, but not shipped, prior to the signing of the armistice, and of deliveries made by contractors up to completion or cancellation of contract.

Assumedly the War Department will retain whatever vehicles it can utilize wherever these may be needed. The other government departments are State, Treasury, Navy, Agriculture, Interior, Justice, Postoffice, Commerce, Labor. Of these the Postoffice, Agriculture, Interior and Navy Departments would have greater need of vehicle transport than the others, which seemingly could use but comparatively small numbers, that is, unless the policies of the administration were greatly changed.

Departmental Need of Trucks.

Of those that could use trucks and cars in large numbers the Postoffice, Agriculture and Interior departments apparently can absorb the greatest numbers. In fact, Fourth Assistant Postmaster General Blakslee has stated that if plans he has proposed, and which are entirely practical, are approved, his division of the public service could use approximately 15,000 machines. But as the department has no appropriation for the extension and operation of service where trucks and cars could be utilized, any proposal for absorbing machines in large numbers for the time being, at least, is impossible.

There is, however, every probability that Congress will meet in special session to make emergent appropriations

There is assumption that the surplus will not exceed 10,000 trucks of various army service types.

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The government plans that the industry shall purchase and resell these through regular channels.

before the end of the fiscal year, which is June 30. This being so, there is apparently no reason why very general change of policy so far as the different departments is concerned with reference to highway transportation, so that practically all of the vehicles could be used by the government cannot be made.

A brief general statement of conditions might indicate how the government could immensely develop the postal service, provided that the policy of developing highway transportation for the benefit of the people is continued. This would seemingly necessitate the coordination of the activities of both the Postoffice and Agriculture departments so far as was necessary for the development of highway express service.

Promoted Agricultural Production.

The Department of Agriculture has promoted the production of food crops. It has undertaken to educate farmers to the advantages of good highways. It is vested with the expenditure of nearly $600,000,000 for road building. It has made surveys of markets for food crops with the object of lessening the cost of living. It has made very careful investigation of conditions with reference to rural express operation and has published reports intended to stimulate the shipment of food direct from the farm to consumer.

The Highways Transport Committee of the Council of National Defense promoted highway transportation intensively. Associated with this committee was the National Automobile Chamber of Commerce. Thousands of organizations throughout the country have considered the general proposition of rural express service with power vehicles. There has been no disapproval or criticism of the plan, but the main obstacle to development appears to be the fact that individuals or concerns making investigation have concluded that the movement of crops is seasonable and that no service could have the continuous earning capacity that would be necessary to make it profitable unless there was assurance of a definite tonnage or volume of freightage.

Not Attractive Business Prospect.

By this is meant that while there is daily shipments of dairy products, aside from this source there would not be such need as would require the operation of highway transports every business day of the year. During the late spring, summer and early autumn vegetables and fruits are shipped to markets daily, but the remainder of the year the volume shrinks greatly. The supplies hauled from the commercial centers to the farms vary greatly in volume, depending on the farm operations. The farmers, of course, raise a considerable part of their own food.

The Postoffice Department could absorb many thousand machines, but lacks appropriation to operate them.

No individual or concern could be expected to make investment in vehicles and operate them to afford service without a reasonable profit. Neither would a business that made substantial earnings a part of the year and was unproductive the remainder attract those with sufficient capital to engage in rural expressing.

Operate 45,000 Rural Mail Routes.

The Postoffice Department today operates close to 45,000 rural delivery routes. The carriers are attached to differing class postoffices and they are expected to make one trip daily over routes ranging from 22 to 28 miles, these being so arranged that the greatest distance from the center of operations is from eight to perhaps 12 miles. The carriers are expected to complete their route delivery in eight hours. They often do their work in half this allowance. They are provided animal vehicles by the government because of the length of the routes. They are paid $1200 a year at least. If the carriers buy automobiles the government allows them $600 a year each, which is compensation for the use of the machines and the cost of operation and maintenance, or a total of $1800 annually.

Little Parcel Post Matter.

The carriers handle all classes of mail, including parcel post. From one point of view they are expected to afford much of the same service that is afforded at a postoffice, making deliveries and collections, selling stamps, registering letters, etc. The rural delivery is not profitable. The volume of parcel post delivery and collection is surprisingly small. Gen. Blakslee is authority for the statement that of 44,000 routes the average distribution was eight pieces and the average collection was one piece, and that the total average was less than 10 pieces distributed and one piece collected. The remainder of the work of the carriers was handling mail of the usual four classes.

Rural delivery routes, operated at loss, now carry very little parcel post matter either inward or outward.

Of these rural delivery routes upwards of 35,000 operate from fourth class postoffices, which obviously from proportions are not located in centers of commercial consequence, but may be within short distances from towns and cities of considerable size. The fact is, however, that these routes must be traversed six days of each week by the carriers. They are paid definite salaries.

Have Carriers Operate Rural Express.

Could not these routes be made the basis of rural express, the carriers to handle mail, but be permitted to engage in whatever haulage they might undertake? Argument may be made that they are required to transport whatever may be offered them as parcel post packages,

The government is promoting rural express service, but has not considered expanding its own routes.

but this cannot be regarded as the character of service that would be expected of rural express. The proposition is to combine what they now do with whatever may be practical in the haulage of crops or delivery of commodities.

For instance, the rural mail carrier must leave the postoffice at a given time daily and is not expected to make stops other than for deliveries and to collect whatever may be in readiness for him. He may have an automobile. He handles an average of nine or 10 parcel post packages daily. He is not permitted to take more than eight hours for his work. Practically every farmer having crops expects to do his own haulage and makes his own purchases when he is in the city or town. He handles direct what might in part, at least, be handled by a rural express service. In this manner the postoffice and the farmer duplicate service.

There is no reason why the rural mail carrier could not make deliveries and collections at every residence along his route. The only limit to his work is the eight hours fixed by the department. If he had deliveries that would require 12 hours to make he would work until he had reasonable time to return to the office within the eight hours of expected duty. This he would be justified in doing. Because of the limitation with reference to working hours, the route mileage and the volume of deliveries and collections, the possibilities of the rural delivery carrier handling what might be classed as express matter have been given practically no attention.

Scope of Service Now Limited.

In other words, the service is limited because of the policy of operating from postoffice bases rather than between terminals, because from 75 to 80 per cent. of the routes operate from fourth class postoffices in towns and cities of small commercial importance, because the carriers must do all their work in eight hours. No one for a moment maintains that these routes show a profit for the department. To the contrary, they are operated at a cost very much larger than the revenue derived from them. This expense is justified by "the demand of the rural public."

Gen. Blakslee has proposed that the department operate thousands of parcel post routes in addition to the rural mail service, these routes being mainly between terminals, to undertake the transportation of all commodities of reasonable weights and bulks, very largely to insure the delivery of food products from the farms to the consumers, leaving the haulage of crops of large proportions to the farmers. There has been no suggestion of extending the rural mail service

Rural delivery is desirable but transportation of food from farm to consumer is absolutely essential.

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Combination mail delivery and express service, obviating duplication, appears to be intensely practical.

so that the carriers might handle general freight.

Possibilities of Expansion.

There is nothing visionary in the government supplying rural carriers light trucks at what might be regarded as a low price, these to replace the automobiles and wherever possible horse vehicles now used, the carriers to have as now an allowance for operating expense and maintenance, to have the privilege of affording whatever haulage service they can develop. The idea suggests that in the event the routes are from comparatively small centers the carriers could operate express service over longer routes, so as to reach markets where farm food products could be delivered to consumers.

The reason why city residents have not bought farm products as proposed is because the present service is extremely limited. There are seemingly large possibilities for this direct delivery of food to purchasers. There is no question that the farmers would be willing to make direct sales to consumers were there certainty of service. Gen. Blakslee is firmly of the opinion that operated as a parcel post division of the Postoffice Department the haulage of food products would be profitable for the government and extremely beneficial for the people, and that it would undoubtedly reduce the cost of food by eliminating the profit that is now legitimately taken by the middleman.

But he does not propose that this transport be undertaken by the rural mail carriers. It may be that this could not be done without change of policy by the department administration, but there is apparently no reason why the proposition should not be considered.

Operating Plans Differ Broadly.

Obviously the operating plan of the rural mail service is entirely different than that of the present parcel post service, or that which is proposed, but if the purpose is to coordinate the two so that the rural service could be developed to handle food products there are apparently no obstacles to the proposition that cannot be obviated.

Statement is made, however, that the department is lacking funds with which this development may be made. If the War Department is to turn over to the Postoffice Department thousands of trucks for its use Congress must make appropriation sufficient to operate them, for unless this is done the trucks would be useless.

In some of the principal cities of the country the Postoffice Department operates upwards of 1000 trucks for collection and delivery and transfer of mail, owning the machines, having garages and maintaining the vehicles to a standard. Seemingly this equipment could be extended very largely and the department could take a considerable number of machines, but to what extent such expansion would be feasible there is no public knowledge. The government for many years contracted for this work in all cities and only since the use of trucks has been general has it undertaken to operate its own equipment. Seemingly there is economy in this policy. If there is no economy no statement to that effect has been made public.

Distribution of trucks to states and municipalities for road building would seem a meritorious plan.

The possibilities of absorption of the Postoffice Department are not generally understood by the public. There might be public sentiment against making the Postoffice system so large, but at the other hand service is what is desirable, and there appears to be no reason to believe that such a proposition would be regarded with disfavor.

States Could Build Their Highways.

The Department of Agriculture administers the distribution of the Federal appropriations to states for the construction of highways, and so far as sentiment now obtains there has been nothing save approval of the plan of constructing good roads in all sections of the country. The policy of the department has been to distribute the funds to the states that meet with the requrements of the law and the actual construction work is to be done under the supervision of the states, usually by contractors. In view of the fact that the people as a whole now approve road building, there is reason to believe that reasonable appropriations for construction and maintenance will be continued for a long period of years. This being a fair assumption there appears to be ground for the suggestion that the government could, through the Department of Agriculture, distribute to the highway departments of the different states such trucks as could be utilized for construction work, and the states could operate these in road building and for such other service as was desirable.

The nation and states will expend large sums for highways which must be maintained to have public value.

Highways Must Be Maintained.

There is no question that thousands of trucks will be utilized in highway work during the next five years, and there would be a large economy in such distribution as compared with purchasing trucks, or paying a profit for those used by contractors. The policy of making contract for public improvement may appear more economical, but this comprehends construction only. The roads, after building, must be maintained, and this can be more economically done by permanent organizations than by occasional contracts. As the nation and states wil lexpend an enormous aggregate for highways, maintenance is imperative to not only obtain the fullest benefit of them, but to preserve the original investments so far as this is practically possible.

There would be no loss to the people were national property diverted to the maintenance of highways.

The distribution might go even further, and be extended to municipalities, such as counties, cities and townships, which are required to maintain their streets and roads. There would be no loss in the sense of investment, for the trucks would have their full service value, and the states and municipalities could utilize them in large numbers.

The repurchase by the manufacturers of thousands of trucks will mean that these will eventually be offered for sale through branches and agencies. The policies of the industry with reference to distribution can only be determined when actual numbers of machines are known and the market conditions investigated. There might be unwillingness manifested by buyers to paying list prices for trucks, even if they had not been used. In any event the fewer the number of trucks the manufacturers shall take over the better for the industry. The market must be stabilized, and this could be best done, seemingly, by the government absorbing all of the trucks. There could be no criticism of the policy of extending the scope of the Postoffice Department, nor of promoting rural express service that would practically serve the people.

FOREIGN TRADE BEING SOUGHT BY CANADA.

Canada business men are making every effort to build up a huge export trade to all parts of the world. The factories at home, together with various industrial corporations, are eagerly developing plans for the expansion of business, while hundreds of agents and the Canadian Trade Commission abroad are advertising Canadian made goods and endeavoring to obtain orders.

Speaking on after-war business in general, Lord Shaughnessy, chairman of the board of directors of the Canadian Pacific Railway, who arrived in Canada after an absence of three months in Europe where he had been engaged in reconstruction problems, stated that the Dominion had every opportunity to build up an export trade which could only be limited by the condition of markets abroad and the extent of the manufactured goods which can be turned out at home in competition with other countries.

Expressing himself on the labor problems as they confronted England at the present stage he stated that a state of general restlessness prevails throughout the country, and such would continue until the last echoes of the war died away and the large armies now mobilized would return to the factories and workshops and farms.

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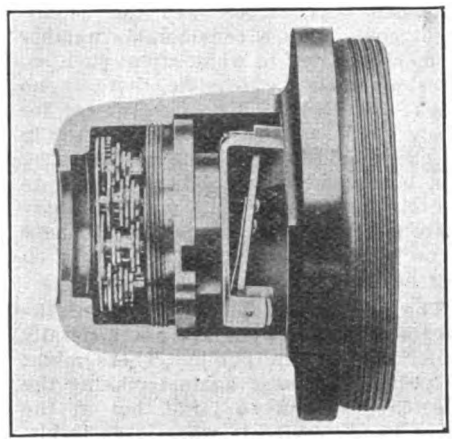
THE NEW DREADNAUGHT ODOMETER

MILEAGE record of the freight carrying road vehicle is vitally important. The miles driven is the basis of cost and revenue and work accounting, and without this nothing better than estimates can be obtained. Approximations will not serve the business man. He must know definite facts. The odometer was invented to meet the demands of bicyclists and later adapted to passenger cars chiefly because they afforded a desirable, but not essential information. The types originally produced were neither accurate nor enduring and various improvements were made with the view of obtaining continuous service and reasonably dependable records.

With the general use of trucks odometers were found necessary for many reasons. To illustrate, the consumption of fuel and lubricants could be measured by miles. The tires are bought with a guarantee of stated mileage. The charges made for time of men and trucks are based on distance traversed primarily. Depreciation is usually computed in terms of miles. Other expense of operation and maintenance is distributed over the mileage.

Odometers driven by shaft are more complicated than those driven direct. The parts will wear and accuracy lessened as the use of the vehicle is continued. These instruments are susceptible to damage. Claim is made that the recording device that is incorporated with the vehicle hub is practical from the fact that it requires little attention and there is ordinarily a positive drive. One fault with instruments of this kind was that the housings were not heavy enough to endure in the event of a wheel hub striking an obstacle. This resulted in differently formed and heavier housings being designed that may be said to be indestructible.

The hub odometer should be understood as a mileage indicator solely, it



Cutaway Section of New Dreadnaught Hub Odometer to Show Recording Mechanism Drive.

registering miles and tenths of miles. All other factors of accounting must be obtained from other sources. Where accounting systems are used, however, much of the detail is with reference to time, which cannot be afforded unless by written record, or indicated record made with an instrument with which a clock is incorporated.

To meet the demand of practically all truck owners (many of whom believe that an odometer is desirable to check any other form of time and distance and speed recorder), the American Taximeter Co., New York City, has developed and is now producing commercially a novel method of driving hub odometers, which is maintained to be superior to all others. This is claimed to drive positively and to be mechanically more enduring.

Practically all other types of odometer are so designed that the registering device is pinned to the front axle spindle or the nut of the spindle that retains the wheel. The odometer cannot be used on driven wheels as a rule because of the variability of speed when there is loss of traction. To install these the trucks were taken to service stations or repair shops where tool facilities were available to drill the axle spindles or slot the nuts to take the driving pins of the odometers. In many instances the axle ends were small and rather difficult operations were necessary, for the hole for the pins had to be drilled at an angle. For this reason the installation of hub odometers required time and more or less expense.

With the object of obviating these shop works the new form of driving mechanism for the Dreadnaught odometer was devised. Instead of connecting the recording mechanism to the axle spindle by a pin these are constructed with a stout steel finger which engages in the castellations of the axle nut. This finger is held firmly in position by a heavy, flat spring riveted to the base of the recording mechanism. By this design all the cumbersome fitting is eliminated—the new "Dreadnaught" goes on like a hub cap. Driving finger drops into position in nut and is held there by the flat spring.

To use this on trucks fitted with nuts which are not castellated a special slotted nut is supplied with the odometer. In the construction of this odometer no spiral springs are used and the device is guaranteed for the life of the truck or car against seepage of grease or damage from collision.

Another interesting quality is that the mileage record always remains in one position, thus making it extremely convenient to read the result, and also it may be added that the device records all mileage covered by the vehicle either backward or forward. A special modified model has also been developed for the smaller vehicles, such as the Ford, Vim and Maxwell. On the Ford the device is attached by simply removing the old hub cap and screwing the "Dreadnaught" on in its place.

INTERNATIONAL HARVESTER STAFF CHANGES.

Alex. Legge, who has been general manager of the International Harvester Co. since 1913, has become a director and vice president. Herbert F. Perkins has also been elected a vice president.

W. V. Couchman, who has been division manager in charge of sales, advertising and collections, has become a vice president, in charge of European business, including manufacturing and sales, and will have headquarters in Europe.

A. E. McKinstry, who has been division manager in charge of experimental work, purchasing and traffic, is now a vice president and takes up the former duties of Mr. Couchman, except for Europe.

H. B. Utley, formerly executive assistant and acting works manager, with supervision over the tractor works, Chicago; the tractor and cream separator works at Milwaukee and the motor truck works at Akron, is now a vice president, in charge of operations heretofore directed by Mr. McKinstry, except for Europe.

On May 1 Lieut. Cyrus McCormick, now in government service at Washington, will become works manager, succeeding Mr. Utley in charge of the tractor works, Milwaukee works and the motor truck works at Akron.

J. A. Everson, formerly manager of the engine and tractor sales for the America company, has become assistant manager of domestic sales, succeeding A. L. Upton. E. F. Bolte is assistant manager of Canadian sales.

MOYERS MONARCH GOVERNOR SALES MANAGER.

G. L. Moyers, for the last three years sales engineer of the Monarch Governor Co., Detroit, has been made sales manager of the company.

Harry Levene, formerly production manager of the General Motors Truck Co., is now works manager of the Monarch Governor Co.

BUDA CO.'S STRENGTH SHOWN IN ANNUAL REPORT.

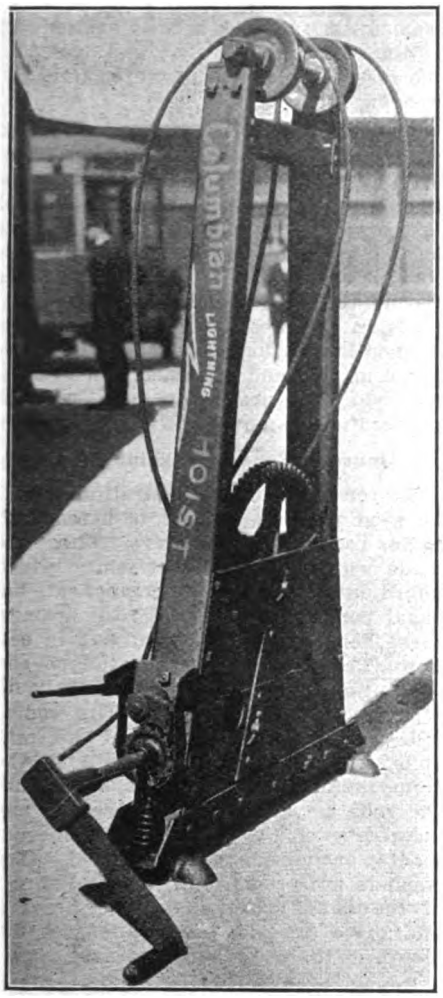
The annual statement of the Buda Co., Harvey, Ill., shows a surplus and undivided profits amounting to $1,769,479.70, and liabilities and assets of $5,281,804.31. A sinking fund for the retirement of preferred stock has been provided, with $195,400. L. M. Viles is now president, succeeding James Viles, who retired on account of health. A. L. Dudley is treasurer. F. E. Place remains vice president and William P. Hunt, Jr., secretary.

OLDSMAR TRACTOR CO. CHARTERED.

The Oldsmar Tractor Co., Wilmington, Del., has been incorporated with $100,000 capitalization, and will take over the interests of the Kardell Tractor and Truck Co., St. Louis, Mo. The company has a factory under construction at Oldsmar, near Tampa, Fla. R. E. Olds is interested in the company.

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Columbian Lightning Hand Hoists for Dump Trucks.



Columbian Hand Hoist Completely Assembled Ready for Installation on a Truck Chassis.

The principal objection to hand operated hoists is the uncertainty of practical operation by one man. This is overcome in the Columbian Lightning Hoist, which is manufactured by the Columbian Steel Tank Co., Kansas City, Mo.

The hoist is so constructed that it will fit any chassis and can be mounted in a few minutes without drilling holes in the frame. It operates easily and elevates loads from one to five tons with but one man at the crank. The hoist will raise the dump bed to an incline of from 30 to 50 degrees in approximately two minutes.

The motion is obtained by a crank on the outside of the hoist frame, operated by a man. The shaft on which the crank fits is provided with a ratchet and safety pawl, these close to the hoist frame on the outside surface. On the inside end of the shaft is fastened a bevel pinion which meshes with a large bevel gear. On the shaft which carries this bevel gear is attached a spur pinion, which drives the hoisting drum gear.

It will be noticed that the hoist is neat in appearance, having plain lines, and the gears are concealed so that there is little danger to the man operating it. The overlapping coils of rope on the drum are designed to produce a rapid lifting speed with a uniform effort at the crank. As the rope coils in layers upon the drum the diameter becoming larger the hoist develops more speed and the load is raised faster with no extra effort on the part of the operator. The hoist is set on the chassis frame and attached with heavy sliding U bolts which hold it in a rigid, upright position.

The frame of the hoist is made of steel plate, the various sections being held together with bolts. The large gear and drum are cast in one piece. The pinion is made of bronze. The height overall of the hoist is 66 inches, length 50½ inches and width 8½ to 11 inches, which includes the swing of the steel cables used for hoisting.

This company also manufacture the Columbian all-metal dump bodies, in various sizes and types for any truck or requirement. The bodies are constructed of metal throughout and all the seams are welded by the oxy-acetylene process, which permits the use of light metal and strengthens the seams and body.

The bodies are mounted on three-inch I beam cross sills, these being securely fastened to two four-inch I beams running the full length of the body parallel with the chassis side frame members. This construction renders the body perfectly rigid whether resting on the chassis or elevated. The hinge that connects the silling to the chassis frame is attached well to the rear, thus making it possible to elevate the front of the body to the desired angle. The inside surface of the metal body is smooth, insuring a quick discharge of all the load. The welded seams also make a water tight body, so that no material is lost in transit.

Provision is made at the forward end of the body for attaching a hoist, power or hand as desired.

WICHITA TRACTORS BEING MADE.

The Wichita Falls Motor Co., Wichita Falls, Tex., has resumed tractor production. Interesting features are incorporated in the design.

Four Bearings Makers Merged Into S K F Industries.

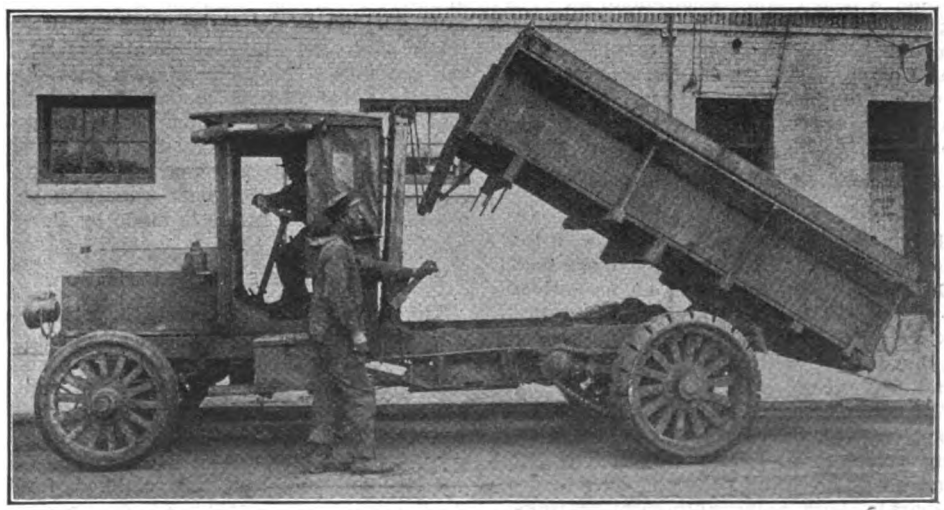
Of interest to all users of bearings is the just announced combination to become effective May 1 of the Hess-Bright Manufacturing Co., the S K F Ball Bearing Co., the Atlas Ball Co. and the Hubbard Machine Co. The new company, under the name of S K F Industries, Inc., will produce a comprehensive series of ball bearings, including the Hess-Bright deep-groove type, S K F self-aligning radial and thrust bearings and ball bearing pillow blocks and shafting hangers.

Through the medium of its engineering organization, backed up by a well equipped laboratory, the new company will be able to place at the service of bearing users the knowledge gained in many years study of anti-friction bearings of all kinds. On request, manufacturers' problems will be analyzed in detail and that type of bearing recommended which (independent of sales considerations) is best suited to the conditions met. In addition the laboratory staff will carry on research studies affecting anti-friction bearing design and application.

S K F Industries, Inc., is the consummation by physical consolidation of a merger, begun some time ago by the four companies mentioned under the direction of B. G. Pryta, president; W. L. Batt, vice president; J. P. Walsh, comptroller, and S. B. Taylor, sales manager. The principal office will be at 165 Broadway, New York City, with branches at Boston, Philadelphia, Atlanta, Buffalo, Cleveland, Detroit, Cincinnati, Chicago and San Francisco.

PENNSYLVANIA LAUNCHES BIG ROAD PROJECTS.

Thirty-five thousand men will be employed this year on road building in Pennsylvania. The State Highway Department plans to build 600 miles of road. Approximately $100,000,000 will be spent by state in road building next four years.



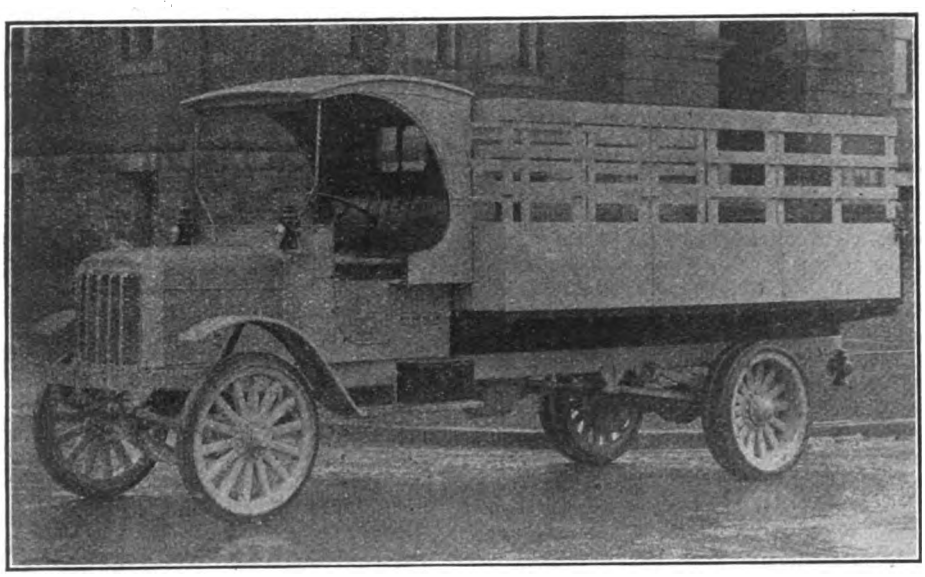
Truck Chassis Equipped with a Large Capacity End Discharge Body the Driver Can Elevate with One Hand with a Columbian Hoist.

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BESSEMER MODEL J2 2½-TON TRUCK

THE Bessemer Motor Truck Co., Grove City and Philadelphia, Pa., is now building a new 2½-ton model which has been given the trade designation of model "J2." This size of truck is a departure from its established series of models. Up to the present time this company has been following the conventional ratings of load capacities—One, 1½, two and 3½ tons.

The claim that this company makes is that the ideal series of trucks should advance in capacity by a geometrical ratio, that is, each truck in the series should be the same percentage greater in capacity as its predecessor. An examination of the conventional sizes discloses the fact that it is a very crude approximation to this ideal, as the percentage of increase in capacity from one to 1½ tons is 50 per cent., the percentage between 1½ and two tons is only 33⅓ per cent., and the increase of percentage from two to 3½ tons is 75 per cent. Thus there is a difference in capacities varying from 33⅓ to 75 per cent. in the usual series.



Bessemer Model J2 2½-Ton Truck Chassis, Driven by Internal Gears, Equipped with Standard Cab and Rack and Panel Body.

The Bessemer company proposes to adopt a closer approximation to an even grading of capacities of the larger models. Thus the new series will consist of a one-ton, 1½-ton, 2½-ton and four-ton truck. A comparison of these sizes shows a percentage of increase as follows: 50 per cent., 66 2/3 per cent. and 60 per cent.

Assembled from Standard Units.

The 2½-ton model, views of which are shown with this article, has some interesting features. Standard parts are used throughout, the car being an assembled product. The motor is a Continental "C-2." This is a four-cylinder, four-cycle, L head type, with a bore of 4⅛ inches and 5¼ inches stroke, S. A. E. rating, 27.2 horsepower. The four cylinders are cast en bloc, the water jacket heads being cast separately and retained by cap screws. The crank case and oil pan are separate, both being aluminum castings. All bearings are carried in the crank case and are easily accessible by removing the oil pan. The valves are interchangeable, being made with nickel steel heads electrically welded to carbon steel stems. The ends of the valve stems are hardened to insure against wear from the tappet action.

The pistons are cast from the same grade of metal as the cylinders, turned and then ground to size and fitted with three diagonally split concentric expansion rings. The connecting rods are I section, made of .35 carbon steel, drop forged and heat treated. The caps are held in place with nickel steel bolts.

The camshaft is drop forged from a single piece of low carbon steel with the cams integral. The crankshaft is the three-journal type, the flange being forged integral to hold the flywheel. A centrifugal pump is used to circulate the water for cooling the motor. The lubrication is by means of a combination force feed and splash system.

The carburetor is a Rayfield LL-3. Ignition is furnished with a Bosch DU-4 magneto. The fan is supplied by the Automotive Parts Co. The clutch is a Borg & Beck 12-inch dry plate type, the propeller shaft and universal joints are Arvac products. The transmission gearset used is a Brown-Lipe model 50, having four forward speed ratios. The front axles are Shuler make and the rear axle is a Torbensen internal gear drive. Perfection springs and Schwarz wood wheels are fitted and the frame is made by Parish & Bingham.

Wick System of Spring Lubrication.

The chassis is provided throughout with wick oiling reservoirs on all spring pins and also on all four shackles, so that instead of turning the grease cup every day and filling every week, the driver is only required to fill the oil reservoirs once a month.

Additional advantage is claimed for wick lubrication is that where grease cups are used, or even liquid lubrication without wicks, a large amount of grit enters the bearings with the grease owing to the fact that the grease cups are often coated with sand and dirt. With the wicks, however, this is of small moment, as the wick acts as a filter and strains out any grit that may get into the reservoir, preventing it reaching the wearing surfaces.

The rear spring shackles are provided with an oil reservoir in the shape of an annular space between the shackle and shackle bushing. A lubricator is placed in the top of the bushing, and a wick is located in the top of the bushing. Therefore, as the motion of the truck agitates the oil the wick becomes saturated and feeds to the wearing surface. By this method lubrication stops when the truck is not moving and the amount of lubrication will be in proportion to the amount of vibration or movement of the shackle.

Unusual Type of Radius Rods.

By referring to an illustration it will be seen that the chassis is fitted with radius rods to take the drive. These are made with ball and socket joints, which afford universal action to compensate unequal compression on the rear springs, these being made somewhat flat in outline. The wearing surface at each end of the radius rods is provided with liquid lubrication through wicks. The radius rods are fitted with eye bolts at the front ends, which are free to rotate in the front radius rod brackets in order that the rods may adjust themselves to any angularity of the axle due to unequal loading or uneven spring action. Leather washers are provided to take the thrust of the radius rod against the bracket, and these are also used to adjust the length of the rod when necessary.

Bronze bushings are fitted to all the pins of the springs, which are 2½ inches wide and 10 leaves for the front springs and three inches wide and 13 leaves for the rear springs. Two plain hexagonal nuts locked against each other are used as the holding medium for the springs, claim being that in case of the stretch of the spring clips these two nuts are still tightly held together and will not work loose. A similar locking device is used on the spring cross shafts at the rear of the truck. Instead of having a shoulder on the cross shaft and putting in shims between the shackle and the shackle nut to make up for variations in frame width, two nuts are used locked against each other, and these may be easily adjusted to meet variations in frame width and still leave the shackle perfectly free. As an additional precaution the outer nut is slotted and fitted with a cotter pin.

The brake equalizing shaft is located in a somewhat inaccessible position when the body is installed, therefore, oilless bearings are provided for the shaft. The dash is of metal construction, carried around the sides with a graceful sweep, and is thoroughly braced to prevent rattling.

The radiator is provided with a guard

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in front so that should the truck strike any object the guard will bend or buckle before damaging the radiator cover castings. The individual parts which comprise the guard may be then removed and straightened.

The fenders are No. 16 gauge pressed steel and of crowned section to obtain extra strength They are supported at the front by a single channel malleable iron brackets and at the rear are bolted to the metal running boards. These boards are made of No. 12 gauge metal, reinforced and riveted to the hangers without the interposition of blocks, thereby becoming integral with the chassis frame. Referring again to the sectional drawing illustration it will be seen that the power transmission system has an inclined position, resulting in a practically straight line drive, the maximum angularity at any of the propeller shaft joints not exceeding 2½ degrees.

The transmission gearset is located in the center of the frame chassis, where it has the advantages of accessibility, reduction of weights of power plant and rear propeller shaft. The weight of the short rear propeller shaft is carried partly by the transmission bearings at the front end and partly by the drive pinion bearings at the axle end. The rear end is subjected to all the vibration of the road, hence the shorter and lighter the shaft can be made the smaller will be the stress thrown on the drive pinion bearings of the rear axle.

The rear axle is provided with the M & S self-locking differential, which provides differential action when needed and also prevents slipping of either wheel under poor road conditions. The model "J2" can be furnished in two wheelbases, 158-inch and 175-inch.

WILL SELL MASTER TRUCKS IN NEW YORK CITY.

The Master Motor Truck Corporation of New York has been formed with sales offices at 1777-1779 Broadway, for the sale of the Master trucks. The officers of the corporation are Charles J. Hughes, president; O. A. Schnell, vice president and secretary, and Rae E. Hall, treasurer.

The Master service station is one of the largest of New York City, having 20,000 square feet of floor space and it can house over 150 trucks. It is located at 403-407 First avenue and 302-306 Academy street, Long Island City. There is every facility for the highest standard of service available and a large stock of parts.

LINDERMAN AT BOSTON BRANCH OF FIRESTONE.

C. B. Linderman has left Akron, O., to take charge of the Boston branch of the Firestone Tire and Rubber Co. He says the rapid progress of shipping by motor truck means that the production of truck tires is to be an important feature of the tire industry in the near future. Mr. Linderman was engaged in advertising and sales work for several years in Akron.

CHANGES IN ATTERBURY SALES ORGANIZATION.

The Atterbury Motor Car Co., Buffalo, N. Y., has appointed Louis S. Hallowell a district sales manager, to cover the states of Michigan, Ohio, Indiana, Illinois and Wisconsin. Previously Mr. Hallowell was division sales manager for the Selden Truck Sales Co. He served in the New York state territory for two years in that capacity.

He has had 16 years experience in the automobile vehicle trade and has a versatile knowledge of all its phases. He gained his first truck experience with the Garford company and his main pleasure car experience was with the Studebaker corporation.

The Atterbury company also announces the appointment of Fred W. Ansteth as district sales manager, covering North Carolina, South Carolina, Tennessee, Georgia, Alabama, Mississippi and Louisiana. Mr. Ansteth entered the automotive trade as a member of the Knox Motors company organization. He has had a diversified commercial experience, part of which was an association with the company headed by Sir Thomas Lipton, which lasted several years.

H. B. Parmlee, previously service manager of the Atterbury Motor Car Co., has been promoted to service engineer and will spend his time visiting Atterbury dealers throughout the country, giving on-the-job assistance. Chas. Wiederich succeeds Mr. Parmlee as service manager at the factory.

INTERNATIONAL PLANS SHIPMENT TO RUSSIA.

The International Harvester Co., Chicago, is preparing to send to Vladivostok, Russia, 40 to 45 carloads of binder twine and farm implement parts. The total freight charges will be about $80,000. This will be one of the largest shipments to that part of the world since the signing of the armistice.

GEARLESS MOTOR CORPORATION FILES CHARTER.

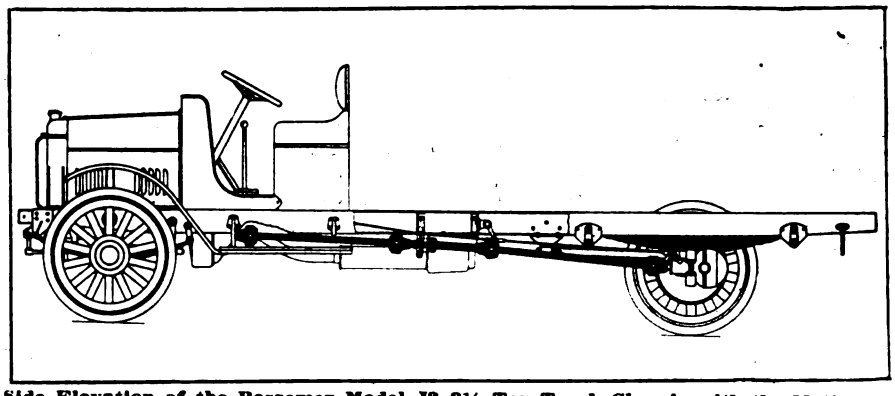
The Gearless Motor Corporation, to manufacture gearless driven steam or motor trucks, etc., with $2,000,000 capital, has filed a charter in Delaware. The incorporators are Charles H. Jones, W. I. N. Lofland and Frank Jackson, Dover, Del.

Militor Corporation Formed by Merger with Knox Motors

A consolidation or merger of interests of those associated with the Knox Motors Co. of Springfield and the Militor Corporation of New York is being effected by which the vericle units produced by the Militor Corporation will be added to those produced by the Knox company. E. O. Sutton, treasurer of the Knox company, states that these will include, among others, the Militor four-wheel drive truck and tractor, which was designed for and adopted by the general staff of the United States army as the standard four-wheel drive truck and tractor after the most thorough tests to which any motor vehicle was ever subjected; also the Militor four-cylinder, shaft-driven motorcycle, which will be manufactured in large quantities, and a light passenger car.

The Knox plant, which is one of the most modern and completely equipped of its kind in the country, utilizes over 230,000 square feet of floor space and is particularly well adapted to produce these products, in addition to the engines and motor tractors built by the Knox Motors Co. This will round out a complete line of vehicles, probably as thoroughly engineered and tested as any on the market. The consolidated company will be known as the Militor Motors Co. and will have a capital of $2,500,000.

The officers of the company will be: N. R. Sinclair, president, also president of the Militor Corporation; George W. Dunham, vice president, formerly president of the Society of Automotive Engineers; R. L. Notman, formerly vice president of the McKinnon Dash Co., and E. O. Sutton, treasurer, formerly treasurer of the Knox Motors Co. The directors will be the above and H. G. Fisk, W. P. Schell and C. H. Beckwith, formerly directors of Knox Motors Co., and E. McM. Mills of Buffalo, formerly treasurer of the Militor Corporation.



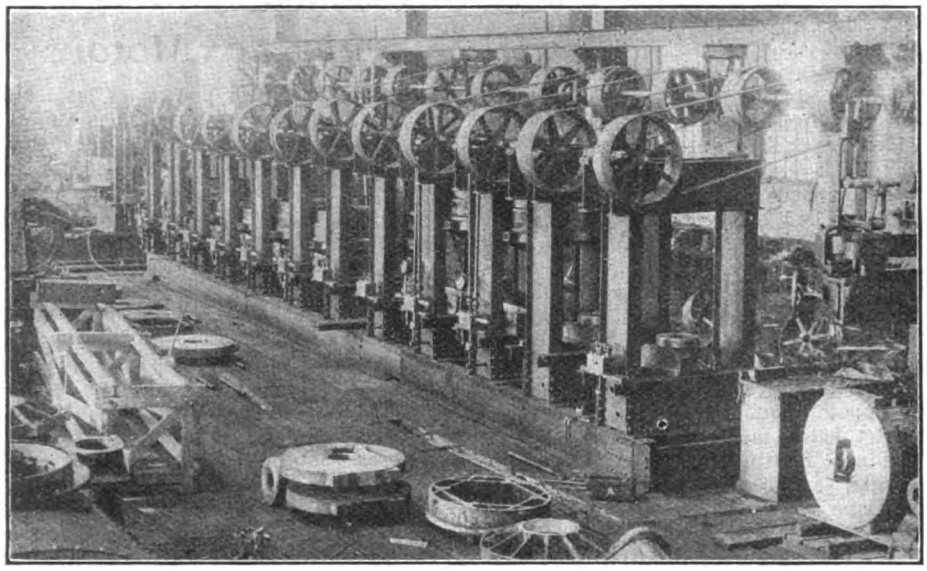
Side Elevation of the Bessemer Model J2 2½-Ton Truck Chassis with the Method of Obtaining a Straight Line Driven Emphasized.

TAYLOR IS HOLT EXPORT MANAGER.

The Holt Manufacturing Co., Peoria, Ill., has appointed Sutherland G. Taylor, Jr., as export manager, with headquarters in Peoria.

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TIRE SERVICE STATION PRESSES



Battery of 11 150 and 200-Ton Solid Truck Tire Presses on the Test Stand at the Plant of the Wellman-Seaver-Morgan Co., Cleveland, O.

TO MAKE the solid tire business successful the dealer should be prepared to give the best service. The general desire of truck owners is to obtain the greatest mileage from their tires and this causes them to delay renewals until the tires are worn very close to the rims. Replacements are then imperative and quick service is demanded. Further, few truck owners want their trucks out of service during productive working hours, and, therefore, the dealer must be prepared to render night service. To sell solid tires successfully a dealer must be equipped to apply them quickly and easily.

To meet these requirements the Wellman-Seaver-Morgan Co., Cleveland, O., has recently developed a hydraulic press for mounting and demounting solid tires. These presses are being built at the Akron plant. The illustration shows a battery of 11 of these presses.

The press consists of an upper and lower platen held in a frame of I beams. The lower platen is moved by a ram working in a cylinder and actuated by a hydraulic pump. The press is equipped with pressure gauge, relief valve and control valve and can be either driven from a line shaft or by a separate motor.

To mount a tire, the ram is lowered, the wheel is placed on the lower platen and the tire in position above it. Power is then applied, either by throwing the belt on the tight pulley or starting the motor. The control valve is then closed and the tire is pressed onto the wheel.

To demount a tire, a ring is placed on the lower platen just large enough to clear the wheel which is placed upon it. A second ring or a set of blocks is placed on the circumference of the wheel, the control valve is then closed and the tire pressed down off the wheel rim.

The presses are designed to mount and demount all sizes up to the largest solid tire built—42 by 14 inches. These presses are giving the best of satisfaction and it is claimed that a front wheel has been removed, the old tire pressed off, a new tire installed and the wheel remounted in seven minutes. The same work has been done with rear wheels and dual tires in 45 minutes.

This company also operate a service department, the purpose of which is to see that every press in the field is working properly. A record is kept of every press shipped and visits are made at intervals for inspection. Users are instructed as to the proper method to operate the press and are also given suggestions as to the best method of applying and removing tires.

U. S. TRUCK SALES ORGANIZATION CHANGES.

The United States Truck Sales Corporation of New York, operated under the direction of C. W. Moody, is now distributing United States trucks in the eastern territory, with headquarters at 1457 roadway, New York City.

Charles F. Stork & Co., Tribune building, New York, recently took over the export sales of United States trucks. The firm has branches in many foreign countries, with the parent house in Holland.

The Cooper Motor Co. is now distributor for United States trucks in southwestern territory, with branches in Kansas City, Mo.; Omaha, Neb.; Wichita, Kan., and Tulsa, Okla.

Cole & Dixon, Inc., is distributor in the metropolitan territory, with sales room and service stations in New York, Brooklyn, Newark, Jersey City and Albany.

M. E. Springer is district sales manager in southwestern territory, with headquarters in Kansas City, Mo., and will cover Kansas, Missouri, Oklahoma and Nebraska.

E. C. Boykin is southern district sales manager, with headquarters in Nashville, Tenn., and will cover West Tennessee, Georgia, Florida and North and South Carolina.

The United States Truck Sales Co. of Indiana, recently organized, is now operating in Indianapolis and through southern Indiana, selling United States trucks. The concern was originally located in Columbus, Ind., but the volume of business necessitated reorganization and removal to Indianapolis.

MANY DEALERS NAMED FOR SANFORD TRUCKS.

The Sanford Motor Truck Co., Syracuse, N. Y., began spring with unusually good prospects, and it was expected that the company would break its previous records. The company was represented at practically all of the big shows and the interest shown in its trucks was taken as an indication that this year will be a banner one for the company.

F. E. Carver, Birmingham, Ala., was recently appointed southern district sales manager, with headquarters in Birmingham. The following sub-dealers were appointed within one month:

Hartig, Fickling & Kleim, Inc., Baltimore, Md.; Max Shopiro, Perth Amboy, N. J.; E. K. Mitchell, Dunkirk, O.; Mutual Iron Works, Jersey City, N. J.; A. J. Whissel Co., Inc., Buffalo, N. Y.; Monn Bros., Harrisburg, Pa.; C. S. Ransom, Inc., Boston, Mass.; Charles Burk, Wildwood, N. J.; Harold Morrison, Waterville, Me.; F. H. Beck, Norway, Me.; M. P. Wight, Augusta, Me.; F. G. Colburn, Farmington, Me.; W. M. Spear, Gardiner, Me.; A. C. Randall, Richmond, Me.; L. L. Corson, Berlin, N. H.; Waldoboro Garage Co., Waldboro, Me.; People's Garage Co., Bath, Me.; Bisett Bros. Garage, Inc., Bradford, Pa.; J. E. Albright, Brooklyn, N. Y.; Bay Shore Cycle Co., Bay Shore, N. J.; College Point Garage, College Point, L I.; Frank H. Gates, Islip, L. I.; Great Neck Garage and Repair Co., Great Neck, L. I.; Abel Magri, Fort Washington, L. I.; P. Moshen & Son, Lawrence, L. I.; Henry McIntosh, Hicksville, L. I.; Newkirk Garage, Inc., Brooklyn, N. Y.; Parkside Garage, Inc., Brooklyn, N. Y.; Post Garage, Long Island City, N. Y.; Premier Garage, Brooklyn, N. Y.; St. Reutlinger's Garage, Bay Side, L. I.; Rosie's Used Car Exchange, New Rochelle, N. Y.; Stenger-Rhom, Sayville, L. I.; William Steigert, Flushing, L. I.; C. W. Smith Garage, Great Neck, L. I.; Whitestone Garage Inc., Whitestone, L. I.; Edwards Auto Co., Watertown, N. Y.

SNEATHEN WITH WALLIS.

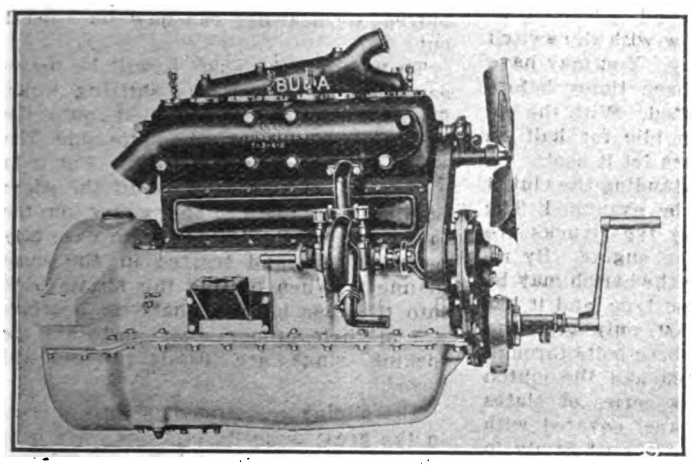
Howard E. Sneathen, formerly with the Kansas City branch of the J. I. Case Plow Works, has become assistant to D. C. Reeves, in charge of Wallis tractor sales.

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OVERHAULING THE MOTOR TRUCK

Suggestions for Inspection and Restoration to Normal Operating Condition Outside of the Service Station with Ordinary Tools

OVERHAULING is a term generally applied to a restoration of a used power vehicle to normal operating efficiency, and is usually understood by owners to carry with it considerable expense and loss of vehicle service. Though every owner unquestionably understands that the better a truck is maintained the longer will be its service life; with rare exceptions, adjustment and repair are deferred and work is often neglected until a machine is no longer operative.



A Typical Heavy Duty Truck Engine Designed for Combination in a Unit Power Plant Completely Assembled.

Systematic care is best. If trucks are maintained as machinery should be to obtain the largest measure of efficiency at the smallest expense the overhaul "bugaboo" would be lost sight of, for after all it is very generally the delusion that not spending money is economy that leads to systematized neglect rather than consistent repair. As a matter of fact were a given period of time, say from 30 to 45 minutes a day, devoted to what ought to be considered necessary work on a truck, the "overhaul" would be necessary from two to three times in five years.

Generally the owner will prefer to have overhauling done by experts who have facilities for any work, because he desires to have the machine inoperative for the shortest time that is consistent with the necessary repairs. Often, if the driver has mechanical skill, the owner may have him overhaul the truck. If the driver owns the vehicle he may desire to minimize the cost by doing all he can of the work.

In any event, when overhauling is necessary, the owner or driver can obtain much valuable experience by doing some or all of the work. If, from inclination or necessity, the owner or driver undertakes restoration, careful reading of the instruction book provided by the manufacturer will afford very useful information. In addition to this there will be advice that may be applied generally, and such suggestions as may be helpful this article is intended to present.

Begin Work on Power Plant.

The first step should be to examine the cooling system. In some makes of trucks the radiator is hung on springs and the jar and vibration do not effect it to any great extent. On other makes the radiator is fastened rigid to the frame. Take the radiator off the frame of the truck, laying it on a flat surface, as a bench. Plug the outlet and inlet holes at the top and bottom with wooden plugs, and fill the radiator with water from a pressure system. Better stand the radiator on a couple of blocks while testing it, for if there are leaks these will be shown by the pressure of the water.

If radiator is tight, wash it out with a strong solution of washing soda and water. Follow this with two or three rinsings of cold water. If leaks are found they can be soldered by using a hot iron, soldering flux or fluid and solder. Or, if the leaks are small, when the radiator is again in place on the frame and connected with the cooling system, fill about one-third full of water. Then put in about a half a can of Semental, fill the balance with water and run the truck for a day. Then draw off the water and refill it. The Semental will fill the leaks and it will show on the outside of the cooling section as small red particles which can be easily rubbed off. The rubber connections should be examined and if they are soft and spongy through use or water will leak through them, they should be replaced with new.

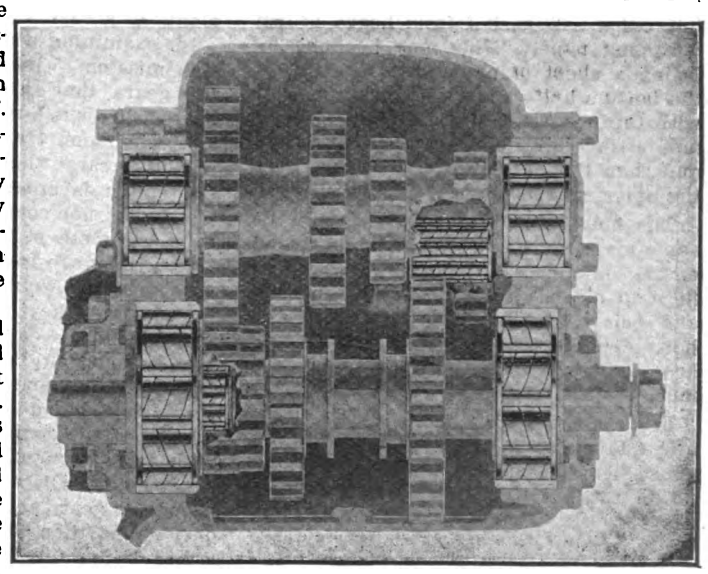
The valves should be ground in and carbon cleaned out of the cylinders. Grind the valves with some good grinding compound (not emery), care being taken to see that none of the grinding compound gets into the exhaust or inlets or between the cylinder and the piston walls. The main and connecting rod bearings should be examined for looseness. This may be done on some trucks by taking off the plates on the side of the motor base, or in others by taking off the plates on the base of the motor or by dropping down the lower half of the motor base.

Tests for Loose Bearings.

A test for loose bearings may be made with a short bar through the hand hole plates, prying up against the bearings one at a time. In tightening the bearings take up one at a time by removing the shims under the caps on each side. If the shims are too thick, make thinner ones of brass or make several out of writing paper. In putting them in place be careful to have the shims clear the shaft and not have the bearing too tight. It should offer just resistance enough so that the shaft can be turned by hand. Loosen this bearing a little and tighten the others in the same manner.

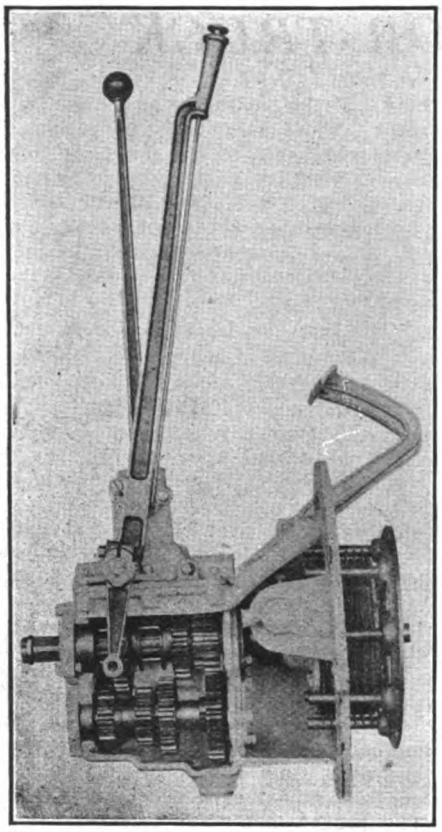
With the connecting rods the same method should be followed. Tightening one at a time and loosening it allows one to test out each bearing separately. The proper method is to scrape in the bearings with a hand scraper made from one or two files that have been ground on an emery wheel to take off the roughness of the file cutting. Care must be taken in grinding not to draw the temper of the steel. After they have been ground smooth on the ends, heat the ends in a forge or stove to a cherry red. Then with a hammer bend the end about an inch, first down and then up, making it the form of a scoop.

In using the scrapers on the bearings, first smear a little Prussian blue on the face of the bearing. Set the bearing in place and tighten the cap. Turn the shaft over two or three times and then take off the bearing cap. The Prussian blue will show the high spots on the bearing and these may be taken off with the scraper. Continue till the high spots



A Standard Type of Selective Sliding Gear Transmission Gearset, Having Three Forward Speed Ratios, Mounted on Roller Bearings.

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Section View of Multiple Dry Disc Clutch Combined with a Selective Sliding Gearset, for a Unit Power Plant.

disappear. Loosen the bearing one or two turns of the nut and continue with the next.

Care Necessary to Secure Nuts.

After the bearings have all been tightened and set up firmly the cotter pins should be put in place and all adjusting nuts made fast. It is very important that this should be carefully done, for if one of the rods should later get loose it would probably punch a hole in the side of the crank case and do considerable damage besides.

Put the lower half of the crank case in place, being sure that the gasket that surrounds it is suitable to use again. If not, cut a new gasket from heavy brown wrapping paper. This may be done by fitting a sheet of paper over the top of the bottom half of the base of motor, and with the peen end of a machinist's hammer strike light blows along the inside and then the outside of the edge where the upper and lower half meet.

The bolt holes may be cut out in the same manner, that is, with the peen end of the hammer. Shellac this gasket and fit it in place. Put the base in position and bolt it, taking care to tighten the bolts evenly. These bolts are light and are easily damaged if tightened too much.

Fill the case with oil up to the level and add about a quart over and above this. The bearings should have plenty of oil for the first few times that they are run after refitting, as a thin film of oil is absolutely necessary between the bearing and the shaft. If the oil is not used freely the bearing may set and the babbitt metal lining may be cut or even melted, so that a new bearing must be installed.

Testing the Engine After Assembly.

Put the radiator on to the frame and bolt it into place. Connect the hose at top and bottom, fill the radiator with water and try out the engine. If the shaft is too tight in the bearings to start by hand better use another car or truck to tow the machine. As most trucks are equipped with a high-tension magneto, this fact alone makes towing necessary. Let the towing truck have plenty of lead and give it a good headway before you try to start the motor on the towed truck.

Hold out the clutch and put the gear shift into high gear. Now with the switch on let the clutch in easy. You may have to try this two or three times before you get the engine started. With the engine started let it run idle for half an hour to an hour and then let it cool.

While the engine is standing the clutch and transmission can be examined. The clutches of some heavy type trucks are in the same case as the engine. By removing the cover plate the clutch may be examined. If a dry disc type, and it has been slipping in the past, only adjusting is needed. There are three bolts through the plates of the clutch and the clutch itself. The clutch is a series of plates alternately steel and steel covered with asbestos on both sides, riveted firmly in place. These discs require no oil or attention in any way except to avoid slipping the clutch as much as possible.

A slipping clutch can be adjusted by the three adjusting nuts on the long bolts that come through the face of the clutch. Turning them to the right will tighten them and turning to the left will loosen them. Note whether the clutch throwout collar is worn. Sometimes through lack of lubrication this collar will wear so badly that the clutch pedal will chatter under the foot. If this is the case a new guide for this collar can be put in without taking out the clutch. See that the grease cups and this collar have plenty of grease.

In examining the transmission, look for gears that are burred. This is a result when one tries to shift gears when the clutch is creeping or has not come to a complete stop. If the gears are badly burred it would be wise to take the transmission completely out of the frame. This generally may be done easily as the transmission is frequently amidship. Disconnect the gear shift levers and then disconnect the universal joints ahead and back of the transmission case. Loosen the bolts that hold it to the frame and remove the transmission from the chassis. The cover may be taken off by removing the small bolts retaining it.

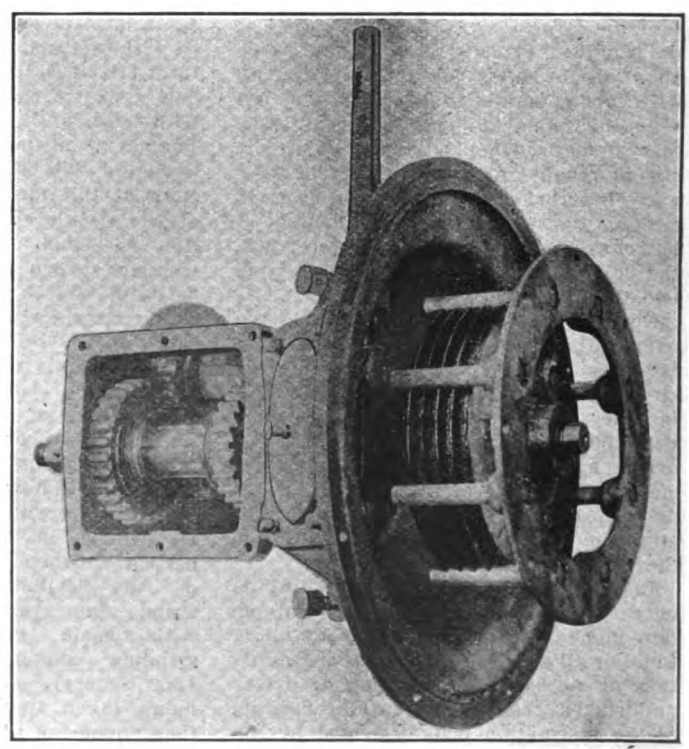
To remove the gears and shaft from the case first drive off the ends of the universal joints left on the shafts, using a block of wood and a hammer for this purpose. On each end of the case where the shaft comes through will be found a bushing or bearing held in place by a locking ring and key. Loosen the key and turn the locking ring to loosen it, then slip it off the shaft. Do the same with the other end. With these ends removed the bearings can now be slipped out.

To take out the shaft it will be necessary to disconnect the shifting forks. These are usually threaded onto the shaft and can be turned to one side. The shaft can now be slipped out. Put it in a vise and with a file dress off the edges of the gear teeth. The gears on the lower shaft in the transmission case may be taken out and treated in the same manner. When putting the shafts back into the case be sure that the bearings are in their proper seats and that the locking rings are firmly seated and keyed.

The sliding gear transmissions as used in the great majority of trucks are built upon the same general lines, some of them being assembled with the clutch and others are placed amidships. Some types are placed in front of the jackshaft when a chain drive is used, or in front of the rear axle in some types of bevel gear drives. Some of the transmissions have four speed ratios instead of three. Many of these are used in worm driven trucks.

The Rear Axles and Shafts.

The rear system of the truck should

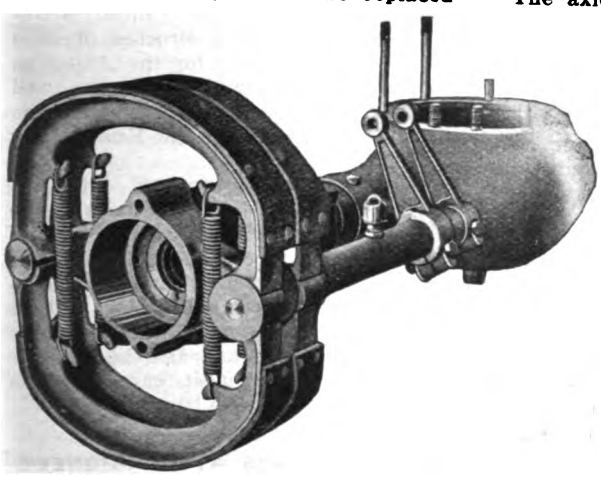


Combined Multiple Disc Clutch and Gearset, with Cover Removed, to Show General Construction.

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be given some attention. There are several different types of axles in use in trucks and the adjustments of these differ. For instance, there is the bevel gear that is used in many of the light trucks up to a ton load rating. Then there is the internal gear drive which has the drive pinions and the internal gears inside the brake drum. This type is used in trucks from one ton to seven tons capacity and on some of the four-wheel driven trucks. The worm drive is used in a very large part of trucks from three-quarter ton to six and seven tons load rating. Last of all is the chain drive, from sprockets on the end of jack-shaft to a sprocket on the rear wheel, using a dead axle to carry the load.

In the bevel gear type of axle look for worn bearings on the axle shafts and each side of the differential. If these are good standard bearings at the start, such as a roller or ball type, they will not require much attention. If they are worn to any extent they should be replaced

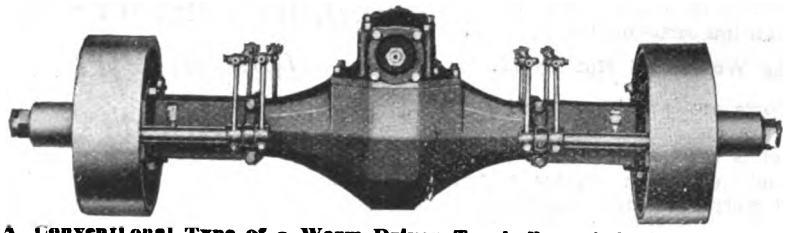


End of a Semi-Floating Worm Gear Driven Axle, Showing the Bearing Seat in the Housing and the Double Internal Expanding Brake Shoes.

with new. If the differential gears show wear or are chipped on the edges, remove them and either grind them off smooth or replace them with new gears. This applies to the pinion and ring gears only. The gears of the differential gearset rarely need attention unless the truck has made an unusual mileage and show excessive wear. In that case they should be replaced with new.

The internal gear drive principle is similar to the differential gearset, but from this to the wheels the principle is quite different. The gears in the differential are nearly the same size. The load is carried on a dead axle, the axle housing simply carrying the driving axle. The final drive is by a pinion on the shafts to an internal gear in the brake drum of the wheel.

The bearings and gears in this type axle should be examined for wear. When excessively worn the restoration had best be made by putting in new parts wherever needed. The worm drive system should be examined as to the conditions of the bearings, and also as to the wear in the worm shaft and worm wheel. If a worm drive is not properly lubricated excessive wear takes place at the worm. If the worm wheel is worn considerably or the worm shaft is cut or



A Conventional Type of a Worm Driven Truck Rear Axle Complete with Two Sets of Internal Expanding Brakes.

scored, replacement may be necessary. The bearings may require renewal if much worn. In the chain drive the chief places for wear to show are the chains and sprockets. If the sprockets are worn they can be reversed and considerable wear obtained from the other side. If the chains are worn or stretched they should be replaced with new. Keep the chains well oiled when in use and they will run fairly quiet.

Four Types of Rear Axles.

The axles used in truck construction may be divided into four classes. The semi-floating axle, which is used in light trucks; the three-quarter floating and the full floating, and the dead axle used in all of the chain drive types and in the internal gear drive type trucks. If the axles are sprung or undue wear is evidenced, they should be replaced with new.

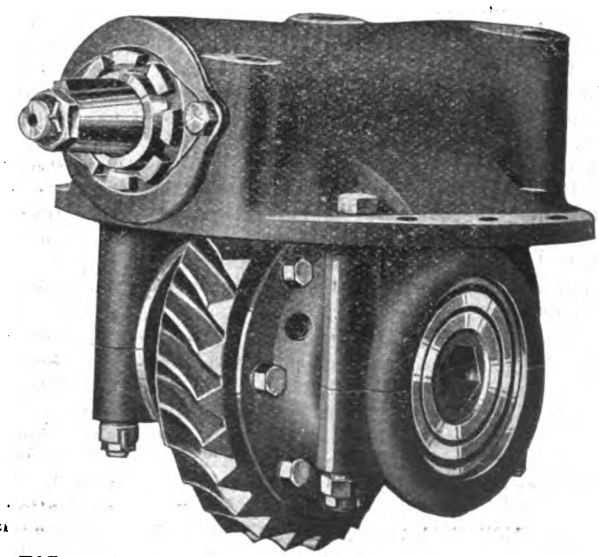
The brake shoes should be examined for wear and if worn too badly should be relined and adjusted. Tighten all loose bolts and nuts on the frame of chassis and guards. See that sufficient lubrication is supplied to the differential. A good grade of steam cylinder oil can be used for this, filling the case to the peep hole on the side of the case. The reason for using a heavy oil in preference to grease is that it clings to the face of the gears and lubricates them thoroughly. Where grease is used the master gear may cut a path in the grease and the pinion gear will not be lubricated. Keep the grease cups full and turn them down once every other day if necessary. Make this a practise and it will save uncertainty on the part of the driver.

The steering gear should receive some attention. There are four classes of steering gears in common practise. The steering gear used in Ford chassis has the gears arranged in the "sun and planet" form on the steering post just beneath the wheel. Take off the steering wheel by loosening the brass nut on top and with a mallet and a block of wood drive off the wheel. Just below on the post will be seen the small case that holds the gears. Remove screw that holds cover and the cover can be removed. The gears may be inspected, new gears put in if necessary and the gears packed with grease. Then replace the cover and screw, put the wheel back in place and set up the nut that holds it.

At the lower end of the steering post look for play in the ball joint and socket. If play is found the joint may be taken apart and the ball smoothed down with a file if found to be out of round. If it is worn too much replace it with a new arm. The ball on the other end of the rod fastened to this ball should be examined and treated in the same manner. The ends of the tie rod can sometimes be tightened to take out the play, or the holes may be reamed out a size larger and a large bolt put in. The front wheels should be adjusted for end play by means of the adjusting cone on the end. Fill the hub caps with grease and screw them in place. This will supply the front wheel bearings with the necessary grease for about 500 miles.

Another steering gear is the rack and pinion type. The lower end of the post carries a small pinion that meshes into a rack or half gear supported at the center by a short shaft that passes out through the frame to the steering arm. The adjustment is obtained by means of an adjusting screw in the bracket at the side of the rack. Loosening the set screw that holds this adjusting screw allows the adjusting screw to be turned either in or out, forcing the rack deeper into mesh with the pinion or drawing it out of mesh.

The face of these gears should be kept greased for silent operation. A grease cup on the steering post feeds the shaft



Differential Carrier and Worm Shaft and Worm Wheel in a Unit Assembly Removed from Rear Axle Housing.

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inside just back of the pinion. This needs attention occasionally.

The Worm and Nut Types.

The worm and nut type steering gear is used to some extent. Here the steering wheel is carried on a long tube, the lower end of which carries a double threaded worm or screw, engaging with two half nuts which slide up and down in guides in the steering gear housing. The threads on the steering screw are right and left hand. One of the nuts has a right hand thread and the other a left hand thread. When the steering wheel is turned, one of the nuts rises on its guide while the other is forced down. At their lower ends the half nuts carry hardened steel thrust blocks which push against rollers attached to the steering yoke, and by their motion the yoke is tilted in the housing, moving the steering arm backwards and forward, and by means of the steering connecting rod, turning the front wheels to one side or the other.

Adjustment is made by means of an adjusting ring at the top of the worm. Loosen the clamp that holds this ring to the post tube and with a large wrench turn the ring to the right to tighten or to the left to loosen. About one-half inch play should be allowed at the wheel. Lubrication may be supplied by means of a grease cup on the worm housing. Keep this filled and turn down a couple of turns every two or three days.

The fourth type is that known as the worm and sector. In this the construction takes the same method as used in the rear system drive, that is, the worm meshes into a gear with the teeth cut to match the spiral of the worm. Adjustment for the up and down motion of the worm is cared for at the bottom of the steering post, while the adjustment of the gear is cared for at the outer end of the shaft that the gear is carried on. Here a ring bushing is found that will take out any play that may develop. The nuts and bolts on these adjustments must always be kept tight. Grease cups on the steering gear housing should be kept filled and turned down. A good practise is once in every two or three days, according to how much the truck is used.

Maintenance of the Magneto.

The platinum points of the magneto interrupter should be kept clean and smooth and so adjusted that they are open 1/64 inch when the interrupter lever is wide open on one of the cams.

It should not be necessary to clean or readjust these points more often than once in six months, as it is not advisable to readjust them until their condition and the missing of the motor assure its necessity.

The distributor and the high-tension brush should be free from gum and dirt. Use gasoline for cleaning this and be sure that the gasoline has evaporated before starting the truck. If it has not dissipated it may cause fire to the magneto and serious damage may result.

The New York Stock Exchange has admitted to the list Keystone Tire and Rubber Co. common stock.

Illinois Farmers Want Benefits from Roads

Illinois farmers are determined that the first roads constructed under the $60,000,000 bond issue be where they will be of greatest value in marketing crops. The farmers will pay $10,000 a year to a secretary to closely scrutinize all legislation, Federal or state, which directly or indirectly affects agriculture.

D. O. Thompson, who has been farm adviser of McLean County, was chosen for the post. He was one of the most active members of the Illinois Agricultural Association organized three years ago for the protection of the farmers of this state.

Secretary Thompson will make his headquarters in Chicago. Self-defense is the primary purpose of the Illinois association in appointing a salaried secretary.

Following is the list of subjects to be given attention by the new secretary: Land ownership, tenancy, labor, food production, markets and marketing, taxation, finance, foreign trade and commerce, roads, transportation, organized business, legislation, war, peace, reconstruction.

Secretary Thompson has been instructed to do everything in his power to secure the necessary action on the following questions:

"That the first roads constructed under the $60,000,000 bond issue be placed where they will be of the greatest value in marketing crops;" "that importation of Argentine corn be again restricted, as it results in unfair competition for United States corn growers;" "that Congress shall support the guarantee of the wheat price and thus keep faith with the farmers by making an appropropriation of sufficient magnitude;" "that a thorough investigation be made of all live stock embargo orders in order that the farmer be placed upon the same plane as the live stock shipper in securing cars"; "that the present price of hogs be maintained at least until April 1;" "that an amendment be adopted to the farm loan act so that the amount of a single loan may be increased to $25,000 and that second mortgages may be handled by banks at a higher rate of interest."

In the platform of the association is a plank relating to problems of reconstuction. It states that the farmers must face the facts fairly and meet with reason and equity every concession made by business, industry and labor toward a return to normal conditions.

Farmers must guard against reduction in prices of farm products ahead of or out of proportion to the reduction in cost items of merchandise, machinery, feeds and labor.

Now that Illinois has organized, steps will be taken to perfect a similar organization in every state in the Union. Later a national body will be perfected, making it one of the most formidable industrial formations in the world.

ROUZE NOW G M C DIRECTOR OF SALES PROMOTION.

W. L. Day, president of the General Motors Truck Co., has announced the appointment of C. F. Rouze as director of sales promotion with headquarters at Pontiac, Mich. Mr. Rouze comes to the G M C organization from the Knox Motor Co., where he was sales manager. Since the earliest days of the motor truck industry Mr. Rouze has been closely identified with it and before that had a wealth of experience in the farm implement industry.

Mr. Rouze was one of the organizers of the Rapid Motor and Transportation Co. of Kansas City in the days when motor trucks were few and far between. "There weren't more than a dozen trucks in Kansas City in those days," says Mr. Rouze, "and to sell a truck was a liberal education, to say the least."

Subsequently Mr. Rouze served as western supervisor for 16 states west of the Mississippi for the United States Motor Co. and also a director of sales for the same territory for the American Locomotive Co., builder of the well known Alco truck. When this truck was discontinued he joined the Knox Motor Co. organization.

"While always connected with the sales department of motor truck industry, Mr. Rouze has had as much experience as any man we know about," said Mr. Day in commenting on the appointment. "He has come to work with us because he believes in us—in our policies and in our future and also because we know him to be honest, earnest and a successful, dependable truck man."

TRUCK DELAYS AT CONSIGNEE'S RECEIVING PLACE.

"One of the most serious problems that the fleet truck owner is experiencing is lost time at the consignee's receiving place," says James J. Hunt, general manager of the Reo Motor Car Co. of New York. "The truck, in order to make it a paying investment, must be kept busy at all times. In addition to the customary delays at the invariably congested railroad terminals, the truck driver often times experiences a similar, if not a more protracted, delay at his customer's unloading platform, due to a careless unloading of a previous delivery by some other transporter."

SERVICE MOTOR TRUCK SALESMEN CONVENE.

More than 100 salesmen of the Service Motor Truck Co. attended a convention in Wabash, Ind. The convention was opened with a minstrel show by the employees of the company at a theater. F. E. Place, general manager of the Buda Motor Co.; F. C. Gilbert, vice president of the Timken Detroit Axle Co., and Mole Cook, general manager of the Service company, spoke. The salesmen were transported between the convention hall and the factory in government trucks. The convention was closed with a banquet in the dining room at the factory.

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VIM SERVICE STATION SYSTEM

By K. Herrick.

GREATLY simplifying the recording and tracing of repair work is the job system of the Vim Motor Truck Co. of Philadelphia, maker of Vim trucks. Statement is made that dealers regard it with increasing favor because of the "workableness" of the system, whereby

SERVICE WORK ORDER

Job No.——— Date———

Name———

Address———

Chassis——— Model———

Time to Be Delivered———

Work Ordered	Price

CAR SHEET
No Cars Delivered Without This Order
All Repairs Cash on Delivery of Truck

Above Work and Material Ordered by

Signed———

Not Responsible for Damage, Fire or Anything Left in Car

To Be Retained by Owner

Service Work Order, Ruled for 15 Entries and Total, Made in Triplicate on White and Buff Sheets and Manila Card, 5½ by 8¼ Inches.

the inspector makes out in triplicate a "Service Work Order," this being a white sheet signed by the owner of the car to be repaired and retained by him until he calls for his car, when he surrenders it. This form is known as the "Car Sheet."

The buff copy of the series goes to the storekeeper and indicates what work has been done.

A manila "Work Card," having a brass-rimmed perforation at the top through which string is to be run to tie it to the steering wheel of the vehicle to be repaired, or to the part to be restored or exchanged, as a tag, is not to be removed until the work has been completed. When the work has been finished, this tag, with other data covering the job, such as the "Work Sheet," "Time Cards," "Requisitions" and a copy of the invoice, or release bearing the job number, are placed in the job envelope and presented to the cashier. The envelope, with its contents, is filed under the owner's name, fitting in a pigeon hole for the purpose, the shop clerk having placed the job number on the flap of the envelope, so that by a hurried inspection of the envelopes in the various pigeon holes he can learn how much time has been put on any particular job.

Cashier Must Release Machine.

Instructions are given that before delivering a truck, or repair job to the owner, or driver, a receipted invoice, or release must be obtained from the cashier. This is a positive check on any confusion about whether a car should be removed, or whether it has been so removed. Under no circumstances, under the Vim system of records, will verbal orders in this regard be accepted.

Tied on the steering wheel of the vehicle, or the part to be repaired, the manila tag of the series in triplicate shows what is to be billed and the bills also are placed in the pigeon hole under the owner's name, with the job envelope. By strict adherence to this rule there is "a place for everything and everything in its place."

After the job has been billed, the form on the outside of the envelope is filled in—motor number, job number, date, chassis number, name and address of car owner, as well as invoice date and ledger page, and the envelopes are filed. The removal of an envelope from a shop pigeon hole to a file is proof that the bill has been sent out.

History Card Shows Condition.

A "History Card" taken of each truck repaired serves a purpose for future reference, as such a record will tell what has happened to the truck, by number as well as owner's name, through: (a)—Accident. (b)—Abuse. (c)—Net depreciation.

This "history" is indicative of the truck's condition and of the type of person driving it. It shows, in a way, what to expect.

With regard to the buff copy of the triplicate series, which is in possession of the storekeeper:

After the job number, name, address, date, chassis number, model, time of delivery, estimated price and signature for authorization of work to be done have been filled in, the sheet is placed in the "Job in Action" rack, where it must be retained until the work has been completed. It is necessary that the bill number for the work and the date the machine was delivered be placed in the spaces provided therefor, having all of the foregoing totaled and checked, with the person's signature showing in a special space also provided. When the work has been completed, as already mentioned, this form, with others, is presented to the cashier.

No. Date

Owner

Est. Hrs. Time Promised

Total Time Amount

		Man's No.		Man's No.		
	ON				ON	
	OFF				OFF	
	ON				ON	
	OFF				OFF	
	ON				ON	
	OFF				OFF	

Time Card, This Showing One Quarter of Ruling, Each Section to Cover One Man for Six Days; Size, 3½ by Seven Inches.

With regard to the "Car Sheet," retained by the owner until the car is called for, the owner is requested on the back of this form to co-operate with the Vim service in various ways, such as allowing the Vim company to properly instruct the driver, and using only the best lubricants on the machine.

Value of Requisition Forms.

In making out requisition forms the dealer, of course, keeps one and sends a buff duplicate to the factory. A rule is that no orders will be filled unless part and chassis numbers are furnished with requisition.

In addition, the following procedure is required: Give the quantity required, but for telegraph orders, the number only, or the code word can be given.

If there is any doubt as to the correct name, or description of the parts wanted, the dealer is instructed to ship the old parts to the factory, or the nearest service station, transportation charges prepaid, so that they can be duplicated. This is regarded as an especially safe way. There is a special form in triplicate—green, buff and white sheets—used for

Motor No. Job No.

Chassis No. Date

Name

Address

This Job Envelope contains the following
Work Card
Work Sheet
Time Cards
Requisitions
Copy of Invoice

Invoice Date Ledger Page

To Be Filed in Job Envelope File Under Owner's Name

Instructions on Job Envelope, Size 9 by 6 Inches, One of Which Covers All Detail of Any Vehicle Work Done at the Factory or Dealer's Station.

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VIM MOTOR TRUCK COMPANY

Use This Blank for Ordering Parts Only

Separate Blanks for Other Purposes Date_____

Ship to_____ Order No_____

Address_____ _____ _____

Street City State

Bill to_____

Address _____

Ship Via_____ When_____

S. O. NO_____

DATE _____

This Order Will Not Be Filled Unless Part and Chassis No. Is Furnished

All Orders Shipped Express or Parcel Post Unless Otherwise Marked.
All Prices Are F. O. B. Factory at Philadelphia, Pa.

Quan.	Catalogue No.	Chassis No.	Name of Part	Sold Last 6 Months	Quan. in Stock

If This Order Confirms a Telephone or Telegram or an Order Already Placed in the Factory Write the Word "Yes" Here.

Signed _____

By _____

Parts Requisition Sheet, Made in Duplicate on White and Buff Sheets, the Former Being Retained by the Dealer and the Latter Sent to the Factory. Size 8½ by 11 Inches.

the return of Vim parts.

When shipping parts as samples the dealers are advised to tag each part with the purchaser's name and address and notify the factory, or the nearest service station by letter, at the same time stating that parts are being sent as samples, giving the number of duplicates required and how they are to be shipped, as well as stating if the samples sent are to be returned with the new parts. It is always advisable to order parts from nearest Vim truck distributor, or service station, to insure prompt shipments and minimum transportation charges.

Instruction for Parts Disposal.

It is a rule of the company that under no circumstances will parts be shipped for replacement, unless the original parts are returned, transportation charges prepaid, to the factory for an inspection and the claim for each replacement has been approved by the engineering department. When the parts are shipped for inspection each part must be tagged with the shipper's name and address and the chassis number of the truck from which it has been removed. When replacement of parts is denied, inspected parts are subject to the shipper's orders for dispo sition when returned and the Vim Motor Truck Co. does not become responsible for parts not accompanied with instructions for disposition if credit is denied.

The Vim company guarantees new Vim vehicles to be free from defects in material and workmanship for 90 days from date of delivery to the purchaser. Replacements, free of charge, of any part claimed to be defective within 90 days from delivery to the purchaser, will be made if such parts are returned for credit or replacement and the company finds them defective. Tires, rims, batteries, speed instruments and other accessories are not covered by this warranty.

The method of use of the special form in triplicate—green, buff and white—designed for the return of parts, is as follows:

The dealer retains the white, or third sheet of the series. He fills out form number one, or the top green sheet and, using a carbon, the buff sheet, or form number two, and sends them both to the factory.

The ideal condition from the factory viewpoint is to supply the dealer with the requisite initial stock, sufficient for his particular territory from a list based on the demands from that county, or local tract. Once a dealer actually gauges his stock, or gets a stock well balanced according to demand, orders on the factory become mere requisitions on stock.

In the case of small garages supplied, little tags are used, instead of the requisition sheet. These tags bear the part number and the job number, with the price of the part, and such tags serve as a basis on which to replenish stock.

NATIONAL TRACTOR DEMONSTRATION AT WICHITA.

The Tractor Demonstrations Committee of the National Implement and Vehicle Association has decided upon Wichita, Kan., as the place for the National Tractor Demonstration for this year. The week of July 21 is the tentative date. A demonstration to be held in Denver, probably in June, was sanctioned. Also one to be held in Aberdeen, S. D., probably in August.

PROVIDENCE CONTRACT AWARDED TO LAFRANCE.

The Providence Board of Contract and Supply has awarded to the American La-France Fire Engine Co., Elmira, N. Y., the contract for two service trucks for the fire department and one motor tractor for the sum of $21,950. A reduction of $450 is to be allowed from this amount for an old apparatus which is to be traded in.

VIM MOTOR TRUCK COMPANY

Philadelphia, U. S. A.

Factory R. P. R. No. Date.....

.....

Vim Truck Parts Returned by.....

Address .....

Quantity	Part No.	Description of Parts Returned	Chassis No.	Date of Invoice	No. of Invoice
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....

Credit Will Not Be Considered Unless All Information Called for Is Given

Owner's Name.....

Address .....

No. of Miles Truck Has Been Run.....

Why Credit Is Claimed.....

.....

.....

If Credit or Replacement Is Denied What Disposition Is to Be Made of Parts:.....

.....

(Signed).....

3. Retain This Copy.

Parts Return Sheet, Made in Triplicate on Green, White and Buff Sheets, the White Being Retained by the Dealer and the Others Sent to Factory. Size 8½ by 11 Inches.

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NEW COTTA TRANSMISSION GEARSET

THE Cotta Transmission Co., Rockford, Ill., has recently developed a four-speed transmission gearset in which the gears are always in mesh and with which it is possible to change speed ratios without shifting gears. This is possible owing to the fact that the jaw clutches are shifted instead of the gears. Transmission gearsets of this type with two and three speed ratios for trucks and tractors have been used successfully for a number of years.

It is claimed that 20,000 trucks, fitted with three-speed Cotta transmission gearset unit, operating on the same principle as the four-speed ratio unit, have been used on the various battle fronts during the world war.

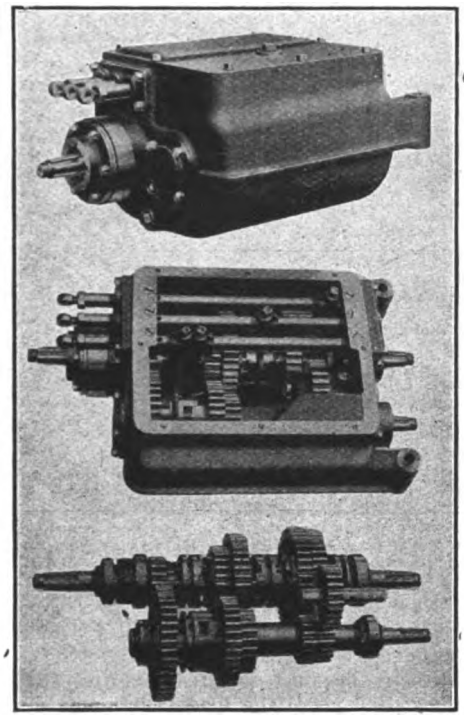
This four-speed transmission gearset possesses exceptional gear ratios, almost providing ideal gear reductions for different speeds. The gear ratios are as follows: Low or first speed, 5.2 to 1; second speed, 3.68 to 1; third speed, 1.86 to 1; direct or fourth speed, 1 to 1, and reverse, 4.666 to 1.

The gear reduction in the second ratio is low enough to start the vehicle under favorable conditions and the low ratio of 5.2 to 1 when conditions are exceptionally bad is the best to use for crawling or where very heavy loads are being moved over rough, muddy, sandy or soft surfaces.

The gears and shafts are made of high grade nickel steel. On the face of the speed change gears is a set of jaw clutches. The shafts are mounted on roller bearings. On the driven shaft are two double sliding clutches, by means of which any one of the speed change gears may be locked to the shaft. This may be done regardless of the speed at which the gears may be rotating and the speed changes can be made easily and quickly. The countershaft is provided with a single sliding clutch which is operated in a similar manner as those on the driven shaft.

Gearset Is Interlocking.

To operate the transmission for high speed the driving and driven shafts are locked together and the clutch on the countershaft disengaged. The drive is then direct and the countershaft and all the mainshaft gears remain stationary. When the sliding clutch is returned from direct to neutral position the countershaft clutch automatically engages.



The New Cotta Four-Speed Ratio Transmission Gearset, Showing the Complete Unit, the Cover Removed, and the Shaft and Countershaft.

The shifting forks are made from high carbon steel, heat treated to reduce wear to a minimum. After the forks have been fastened to their respective shafts in the correct location by means of square headed set screws, these are held with wires which pass through the heads of the screws and are placed through holes in bosses on the fork hub. The ends of the wires are then twisted together so that the wires cannot work out of the screws and fork bosses. By this simple method of fastening the set screws are prevented from slackening, which would allow the forks to move along their shafts and from their correct locations.

The clutch fork shafts are provided with a locking device at each end of the transmission case which positively prevents the engagement of two speeds at the same time. Upon shifting any rod lengthwise the other two rods will be automatically and positively locked against shifting movement until the shifted rod is returned to its original position. The locking balls or members are of such size and so arranged that upon shifting a rod lengthwise the ball will be forced out of its notch into engagement with its complimental locking ball and confined against movement in the opening between the periphery of the rod and the complimental ball, so that this rod will be locked against lengthwise movement.

The double-step faces on the jaw clutches insures quick and easy engagement without strain on the teeth, the six faces of the clutches meshing together.

Lubrication Leakage Obviated.

Another feature of the transmission is the provision for working the oil or lubricant in the casing away from the stuffing box of the driven shaft. This is done by means of a left hand spiral thread which prevents the oil from crowding and leaking past when the driving shaft is in operation.

At the other end of the case, on the shaft, is machined a right hand oil groove integral with the clutch element, so that when the driven shaft is revolved in any forward speed, the right hand thread will work the oil inwardly. However, when the direction of drive is reversed the thread will have a tendency to carry the oil outwardly and to obviate this the transmission has been equipped with peripheral spiral threads on the spacing collars, but machined with the opposite hand, so that the oil which works past the first thread will be forced back by the second thread.

The idler or reverse gear shaft is supported on each side in brackets cast integral with the transmission case. The top of the case is covered with a cast iron plate held down with eight screws and lock washers.

The main shaft roller bearings are held in flange supports, fastened to the case with six set screws and lock washers in each. The clutch shafts are held and supported in brackets at each end of the case and these are fastened to it with four screws and lock washers. The transmission case opposite the countershaft is provided with a large flange held by means of four screws and lock washers. When it is desired to disassemble the transmission, by removing these various elements the operation then becomes comparatively simple.

BIG PUBLICITY CAMPAIGN TO BOOM TRAILERS.

The Trailer Manufacturers' Association of America, at a meeting attended by 20 members in Detroit, decided to conduct an extensive publicity campaign on trailers. All members subscribed liberally to the publicity fund, which reached a considerable amount.

The association engaged the services of H. W. Perry, formerly connected with the National Automobile Chamber of Commerce. He has had considerable experience on automotive subjects and is considered an authority on the same.

General offices of the association and manager will be in New York City.

MANY LIVES SAVED BY MOTOR HOSPITALS.

Lives were saved during the influenza epidemic by motorized equipment of the Massachusetts State Guard. The equipment, which comprises two operating rooms mounted on two-ton Pierce-Arrow chassis, is used in case of catastrophies or other emergencies.

The operating rooms are fully equipped with running water, surgical appliances, sterilizing apparatus—in fact they are miniature hospitals. During the influenza epidemic in Boston open-air camps were opened near the city. The Pierce-Arrow "hospitals" were stationed at these camps. Appendicitis cases or illnesses which required speedy operation were treated in these operating rooms at once. Thus the delay and dangers incident to the removal of patients to the city's hospitals many miles distant were avoided.

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NEW SERIES OF CLYDESDALE TRUCKS



Clydesdale Five-Ton Truck Chassis Equipped with an All-Weather Driver's Cab and a Platform Stake Body, Used for General Haulage.

THE new series of Clydesdale trucks, manufactured by the Clyde Cars Co., Clyde, O., ranging from one to five-ton capacities, are in outward appearance distinctively Clydesdale, yet far better looking. There has been a refinement in a good many details, particularly in radiator and hood design, which gives the new trucks a real individuality.

On every model the Clydesdale automatic controller, known as the "driver under the hood," is a feature. This unique device is not only a governor as it is generally known, but an automatic control over the engine which keeps the truck running at any speed regardless of load or road conditions, without the driver touching the throttle. The manner in which this remarkable system of control is worked out by a simple automatic contrivance is an interesting story of scientific application of weight balance to engine control. The governor is driven off of the camshaft by a helical gear, and in general principles is very similar to an ordinary weight governor. The controlling feature is brought about by taking advantage of the engineering principle of governor weights being thrown out of balance when the load is suddenly relieved.

The Practicality of its Operation.

Let us assume that the driver has just cranked his engine which is idling. He shifts into first speed and pushes his throttle up the quadrant to a point that would give the engine say 12 miles an hour operating speed on high gear. He then engages the clutch, which throws the load off the engine and consequently on the controller, causing the controller weights to move out. In the process of moving out these controller weights pull the lever which operates on the carburetor, opening the carburetor to a point where it will feed enough gasoline to bring the engine up to a speed that would drive the truck at 12 miles an hour on high gear, or, let us say, 1600 revolutions a minute. The speed of the engine will not go above that point.

Now let us assume that the driver releases the clutch to shift into second speed. He is not obliged to touch the throttle, because when he throws out the clutch pedal the load is immediately taken off of the engine, the controller weights are thrown out of balance and drop down, pulling back the throttle to an idling position, and the engine slows down to idling speed. Then, as he engages the clutch with the gears in second speed, the process is repeated and the engine picks up to its 1600 revolutions a minute. Again, when he shifts to high, the same operation takes place and he arrives at his driving speed of 12 miles per hour.

The Automatic Control on Grades.

Now let us assume that the truck starts down grade. The controller weights are thrown out of balance and the throttle closed sufficiently to maintain the 12 mile speed. At the other hand, let us suppose that he strikes an up-grade, mud, sand, or other hard going. The tendency is to throw a greater load on the engine, therefore a greater load on the governor, causing the weights to throw out still farther and thus opening the throttle maintaining, as before, the truck speed of 12 miles per hour.

Thus it can be understood that the Clydesdale controller automatically eliminates inexpert handling of the throttle by taking the control of the engine very largely out of the driver's hands. To keep his truck running at a constant even speed, the operator of a Clydesdale truck has nothing to do with the foot accelerator or hand throttle. This function is taken care of by the controller so correctly that there is the least possible strain on the engine and other power transmitting units, and a minimum waste of power and fuel. By regulating the supply of fuel so that the engine receives only what is needed and yet all that is required at any time, the Clydesdale controller does what only the most experienced driver is able to do in the handling of his engine.

The Distinctive Clydesdale Radiator.

Although fundamentally of the same construction, the new Clydesdale radiator is far better looking than any of its predecessors. It is of the type adopted after years of experimentation of the London General Omnibus Co. of London, England, one of the largest truck producing institutions in the world. It consists of upper and lower tanks connected by a compact mass of copper tubes that form the cooling section. Because of the large number of tubes and the unusual water capacity of the entire cooling system, no fins or other means of radiation are necessary. The great advantage of this construction is that whenever any of the tubes become damaged they may be readily replaced. More than that, if the driver meets with an accident on the road in which one or several of the tubes are damaged, he may crimp the ends of the damaged tubes with a pair of pliers and proceed on his way. The efficiency of the system is not impaired and the truck may be used until repairs can be conveniently made.

In the matter of power and transmitting units and accessories, the highest grade products obtainable are used throughout. The Clydesdale company does not lay great stress on the names of the manufacturers of these particular units. It believes that the worth of a truck depends on a unity of sound engineering practise rather than the fitting of recognized parts without scientific application of one to another.

One conspicuous feature of all the Clydesdale models, however, is the generous oversize of every one of its units. Through its seven years of experience as truck builders, the company has learned that ton rating of motor trucks is universally abused by truck owners. For that reason all Clydesdale trucks are able to stand the most abusive overload which may be put upon them, although it is not to be understood that the company advocates overloading, or sells its trucks on the fact that they will withstand such usage.

Of particular interest in this regard is the frame, which is built so solidly that it will endure the excessive strains imposed by dumping bodies, for instance, without the slightest distortion.

The factory states that Clydesdale trucks are in use in 27 countries throughout the world—some in remote districts in Africa, others in the Dutch East Indies—and there is a very sizeable representation in practically all of the larger countries.

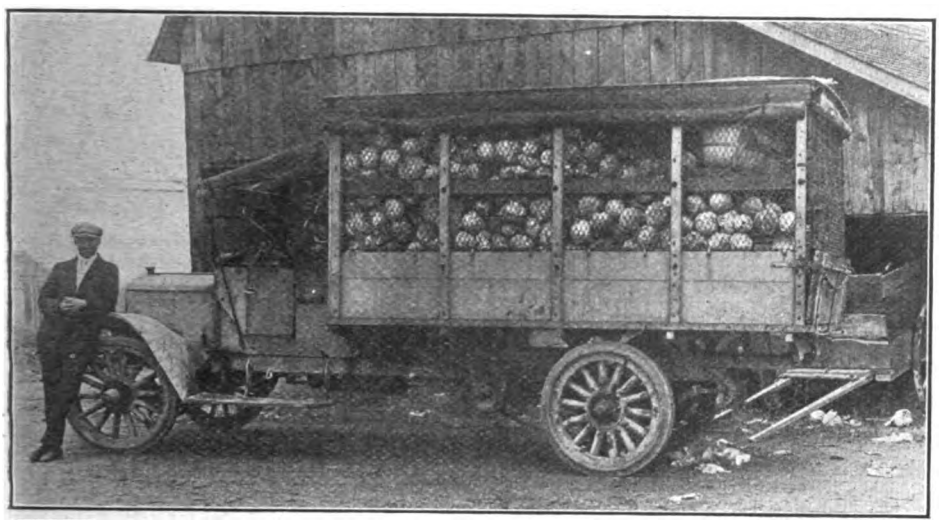
WAR CONTRACTS FOR TRACTORS BEING FINISHED.

Uncompleted government orders for tanks, tractors and trailers total $14,929,500. In most instances there is still a need for tractors, trailers and tractors, although in some cases orders are being completed because there is no termination clause. All five and 10-ton tractors now in France are in use.

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TRUCK HAULAGE TO FARM MARKETS

Practical Possibilities Shown by Survey by the United States Department of Agriculture—Experience with Service and Factors Governing General Operations.



The Cabbage and Cucumbers in This Truck Load Were Hauled 20 Miles to Buffalo, N. Y., and Arrived in Good Condition. The Wire Netting All Around Holds a Large Load in Place.

HAULING farm produce to market in motor trucks represents one means of the successful solution of the "short haul," one of the most difficult problems which confronts the transportation expert, reports the Bureau of Markets of the United States Department of Agriculture in a recent publication, "Motor Transportation for Rural Districts." The failure of railroads to keep pace with the expansion of the short-haul business; the development of the producing areas adjoining the larger cities in proportion to the production demands asked of them; and the upbuilding of the motor truck manufacturing activities, as well as the recent war emergency crisis, have popularized this method of moving farm produce to market.

The Bureau of Markets conducted an extensive survey of 60 rural motor routes to ascertain the defective practises and as far as possible to suggest improvement which would stabilize the industry. The bureau found that rural freight is hauled by the farmer who owns a truck and handles his personal marketing, as well as that of his neighbor, by motor; by the local truck operators who haul farm produce as a business; by the local automobile or truck agencies that operate transportation trucks as a side line; by the city transfer company which also engages in rural hauling; and by the large corporation which operates a fleet of trucks over a wide range of territory. Naturally with such a diversity in the hauling agencies there is a similarly wide range in their methods of doing business.

Pioneers have made mistakes which should teach valuable lessons for their successors. For example, too many ambitious motor men buy their trucks first and then make a study of local conditions and the prospects for the development of a profitable and permanent hauling business in their communities. They neglect to inventory such critical conditions as the volume of farm products produced along the contemplated routes, the volume of miscellaneous hauling supplementary to regular loads; the competition of other carriers and the character of the highways over which the trucks must run. A motor truck route established in a sparsely settled or non-productive region is foredoomed to failure, advise the experts of the Department of Agriculture. At least a potential supply of commodities must be available for hauling if there is to be sufficient business to make the route a paying one. A region devoted to the production of a few staple crops which move to market during a comparatively brief season will not provide business for a permanent route. For successful operation a reasonably dependable tonnage is essential throughout the year.

Regions devoted to truck farming or



Celery in Crates Is Easily Carried in Most Kinds of Trucks.

ADVICE ON BUYING A TRUCK.

There are several sources of information which may be helpful to the man contemplating the purchase of a motor truck.

Previous personal experience of the operator is exceedingly valuable. Experiences of other operators may often be secured for the asking. Motor truck manufacturers will be glad to furnish prospective purchasers with such information of this nature as may be available. Data secured from truck manufacturers very often do not indicate the conditions under which the figures were secured.

Information thus offered is usually an honest attempt to aid buyers, but almost invariably there is too much generalization to make such figures a very valuable basis of estimation.

Many cost statements issued by truck companies do not take into consideration the varying classes of highways over which trucks run, variations in the load, total monthly or yearly mileage and other important factors.

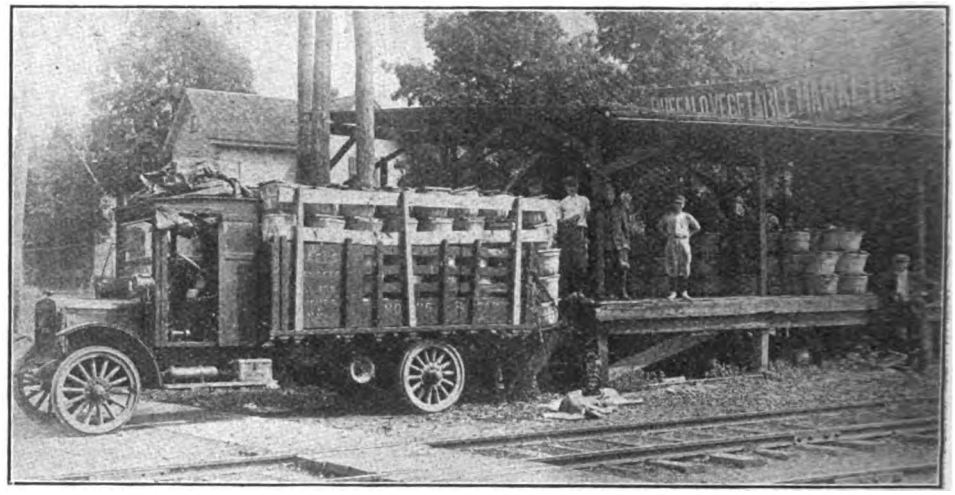
A bulletin recently issued by the U. S. Department of Agriculture's Bureau of Markets, "Motor Transportation for Rural Districts," will aid the prospective operator. It will be sent free on request.

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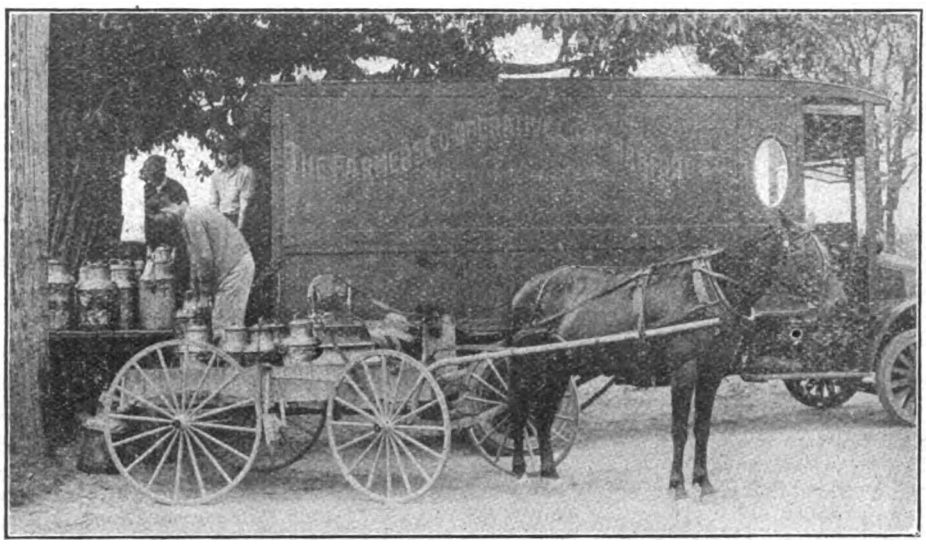
dairying provide rich fields for motor truck operation. However, consideration should be given to the nature of the products to be hauled, as low priced, bulky staples may not stand the transportation charges necessary to maintain a route. For illustration, it is unlikely that hay can be transported by motor truck for long distances except under unusual conditions with respect to price. Perishables may stand the motor truck tariff if the transportation service to market is speedier than the customary means of transportation. Such commodities as cream, milk and eggs which are high in price as compared to bulk, may bear a reasonably high transportation charge if more satisfactory facilities are offered.

Study Prospects Before Starting Route.

The back haul or return trip which often is made without a load, constitutes an extravagant practise which truck men should strive to avoid. Attention should be concentrated on the problem of arranging for freight so that there will be a profitable load on all trucks whenever they are operated.



The Peas in This Load Were Delivered by Motor Truck to the Dealer at the Market 15 Miles Away and Arrived in Fresh Condition. This Is a Concentration Platform, to Which Perishable Products Are Brought from All Directions.



The Farmers of Harford County, Maryland, Operate a Motor Truck Route for Themselves with Entire Success. This Is One of Their Roadside Loading Platforms, to Which the Farmer Brings His Milk by a Short Haul, and the Truck Takes It to Baltimore.

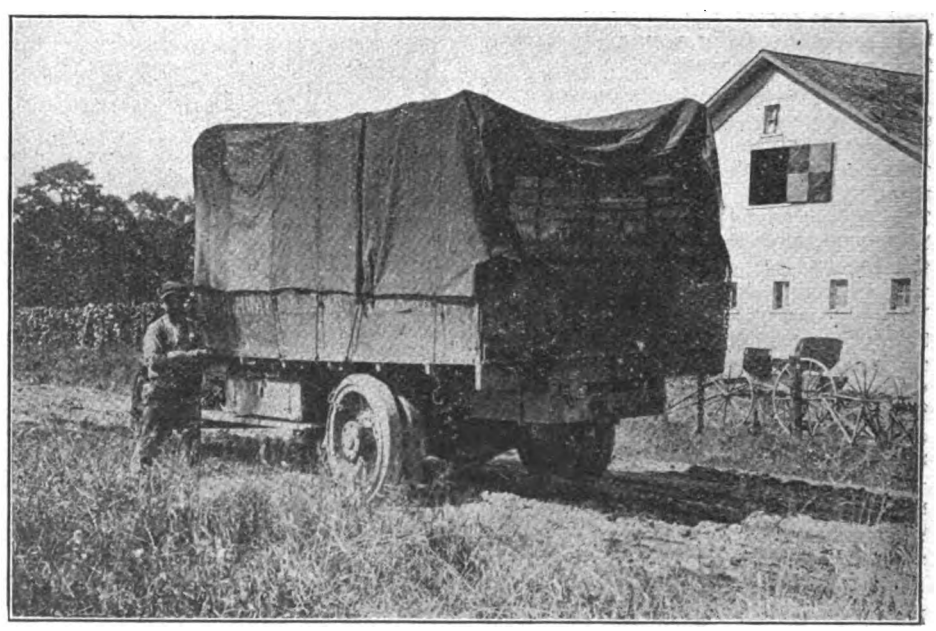
Keen competition is another factor in motor truck service. Some operators have found it possible to compete successfully with rail service and yet to charge rates rather higher than were charged by the customary carriers. Such conditions, however, are only possible where the service is developed on a most extensive scale. Freight and express schedules in some districts have been unsatisfactory to shippers recently and by offering a more prompt and speedy service truck owners have developed a very satisfactory business that ordinarily would be handled by rail.

Good roads are a prerequisite to successful motor truck operation. Very few operators appreciate the increased expense which results from travel over poor roads. The unfortunate operator who tries to maintain his services over highways which are virtually impassable and unsatisfactory has found that his daily operation costs far exceed the average normal expenses and seriously affect his profits.

Depreciation and Operating Costs.

The man who plans to operate a motor truck should have a good working knowledge not only of his engine, but the entire machinery in general. The wages paid drivers vary in different sections of the country and for trucks of different sizes, ranging from $2.75 to $7.50 a day. Depreciation is one of the heaviest annual expenses with a motor, a loss of from 20 to 33 1/3 per cent. of the truck each year being required to cover this charge.

Data collected by the Bureau of Markets show that the annual cost of overhauling and repairing the trucks ranges from $100 to $900 a year. Those truck operators who make it a point to keep their machines in a constant state of repair have relatively small charges to meet for annual overhauling. On the other hand, those who operate their trucks as long as possible with no regular repairs often have to pay a very heavy overhauling charge at the end of



An Open-Top Stake Body, with Loose Canvas Cover, Carries a Large Load of Grapes, but Is Not the Best Type of Body for Hauling Perishable Products.

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the year. Tire expenses, garage rent, taxes, licenses and insurance, overhead expenses, repairs and equipment all swell the annual maintenance costs.

Rates for Hauling.

In some sections there are as many different systems of computing rates and charges for hauling as there are motor trucks, each owner having an original way of figuring his transportation toll. There are several factors which should be considered in the establishment of rates in any district. The value and the fragility of the load bear a direct relationship to the rate that should be charged. Very valuable or fragile loads involve the greater risk on the part of the carrier and the tariff for the carriage of such goods should be sufficiently high to offset the risk involved.

The length of the haul naturally is another prime consideration. Road conditions directly affect operating costs and hence must also be considered in establishing rates. The perishability and bulk of the load must be taken into consideration. Where complete delivery is made from the door of the shipper to the door of the consignee, and service is rendered which is not duplicated by the railroad, this additional service must be considered in fixing the rate.

Practically no rates have been established on the basis of cost plus a reasonable profit. A satisfactory rate must be one which is low enough to attract business and high enough to offer a reasonable profit to the operator. Where conditions do not permit the establishment of such a rate, care should be exercised in starting a route.

Collecting and Delivering Freight.

Farm to farm collection of freight is practised on short rural routes where comparatively few stops are ordinarily made. Such collection is costly both in time and gasoline and hence necessitates higher rates. The cross roads collection system is popular also, the shippers centralizing their produce at certain points where it can be loaded on the trucks. The central assembling method where the shippers concentrate their freight at one point or where a lighter, auxiliary truck collects and delivers it is worthy of trial, as it possesses many efficient features. The delivery of the goods at their destinations may be handled satisfactorily in a similar manner.

The small scale truck line usually collects the charges when the freight is accepted, while the more elaborate systems which haul regularly for different patrons submit weekly or monthly bills. It is essential that each truck operator, no matter how simple his system, should keep a record of his expenses. The Bureau of Markets in an investigation of over 60 rural motor routes, ascertained that many operators who kept no accounts thought they were making a profit, when, as a matter of fact, they were gradually exhausting their original investment for current expenses.

Rural hauling by motor is limited and restricted by the operation costs as compared with those of railroads, electric lines and boat routes. The truck man must practise every possible economy in order to minimize his expenses, which will be reflected in his charges. Truck routes are only adapted to sections in which the roads are good, as poor roads are an insurmountable obstacle to motor freighting. Furthermore, truck operators must be financially responsible for the goods they carry. Consequently they should be protected by adequate insurance. It is only by such practises that a permanent and certain business can be developed.

BUSINESS OF BARRETT CO. SHOWS INCREASE.

The report of the Barrett Co. for last year shows net sales of $41,339,664, an increase of aproximately $7,000,000 over the figures of 1917. After charges and Federal income taxes the net profits available for dividends were $3,949,979, equivalent after preferred dividends to $20.82 a share on the common. In the preceding year the amount applicable to the common stock was $3,728,302, or the equivalent of $20.21 a share. The reserve for Federal taxes was $2,000,000, an increase of $1,580,000 over 1917. The balance sheet shows working capital to be $14,638,489. The reserve for depreciation was $4,307,471, an increase of nearly $1,500,000.

In his remarks to the stockholders William Hamlin Childs, president of the company, says:

"The increase in the costs of materials and labor referred to in our circular letter of April 1, 1918, continued during 1918, and in common with other industries the company suffered a diminution of sales and earnings during the last two months of the year. Notwithstanding these handicaps, however, the net earnings of the company before reserves were set up to cover adjustments of inventories and of income and excess profits taxes, were the largest in the history of the company. The present financial condition of the Barrett company and of all its subsidiary companies and departments is an eminently satisfactory one, and the business outlook for the future is as promising as can be expected, in view of unsettled state of the country."

NEW YORK CHARTERS.

A charter has been granted for the Marine Trucking and Warehouse, Manhattan, New York City. L. F. Holtzmann, L. F. Sniffin and J. H. Becher, 423 54th street, Brooklyn, are the incorporators. The capitalization is $10,000.

A charter has also been granted for the Vannievelt T. Gourdriaan Co., Manhattan, New York City, which will engage in stevedoring and forwarding. The incorporators are G. Stearing, A. L. Pincoffe and L. Gesken, 250 West 103 street. The capitalization is $20,000.

TRUCK CORPORATION FORMED IN BOSTON.

The Intercontinental Truck Corporation, Boston, truck vehicles, has been chartered by Biar Crohon and Herman L. Schuh of Grand Rapids, Mich., and Fred C. Fernald, Boston.

Wilson Truck Plant Back to Pre-War Production.

E. D. Hand, vice president and commercial manager of the J. C. Wilson Co., Detroit, manufacturer of Wilson trucks, announces that the company, after many months of government truck work, has delivered its last government trucks, and that the Wilson factory is now prepared to devote its facilities to general business.

"The demand for Wilson trucks during the past year," he says, "has been greater than we could supply, due to our government work, but for the coming season we are greatly increasing our production in order to meet a general demand that is now growing more rapidly than any business increase I have ever witnessed.

"One cannot deny that business prospects are above par, better than at any other time in the history of the truck industry. The efficiency of the motor truck over other methods of rapid haulage is no longer a question in the minds of transportation users.

"Because of congested freight facilities, as a result of the war, the country is undergoing an important evolution in the matter of handling freight shipments, with the result that many lessons have been learned, proving beyond doubt the dependability and economy of the motor truck. Rural motor express lines are already bringing about changes in the farmer's life, and in his methods for marketing his crops that will have a marked effect on everyone. Intercity motor express now permits daily shipments and almost hourly deliveries to points that have previously been one or two days apart, at a lower cost than has been possible heretofore.

"All such activities point to tremendous expansion of the industry and it is difficult to see any other future than one of growth and prosperity."

PITTSBURGH TO BUY THREE AUTO PATROLS.

The Pittsburgh, Pa., council has passed an ordinance authorizing the mayor and the director of the department of supplies to buy three auto patrols at a cost not to exceed $6000, and three motorcycles for the bureau of police, at a cost not to exceed $900.

SELDEN DIVISION MANAGER.

Milner L. LaHatte is now division sales manager for the Selden Truck Sales Co., Rochester, N. Y., succeeding C. M. Snow, who has become a special field supervisor.

TRUCK TIRE SERVICE CO.

The Ideal Truck Tire Service Co., Inc., has been chartered with $30,000 capitalization by D. Klein, L. Flanch and R. H. Goldberg, 103 Norfolk street, New York City.

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NEW TRAILMOBILE TRAILER UNITS

TRAILMOBILE units, both trailer and semi-trailer, are built by the Trailmobile Co., 502-22 East Fifth street, Cincinnati, O., the former being in sizes rated at 1250, 1500, 2000, 3000, 4000, 7000 and 10,000 pounds load capacity, and the latter at 3000, 6000 and 10,000 pounds capacity. These are equipped with differing types of bodies, a number of which are stock products and the others constructed to specifications.

The company is now producing 4000 and 7000-pound trailers to a new design that is maintained to be an improvement of the type previously built. These are known as "four-wheel Trailmobiles" and are stated to be identical in construction aside from the variance in dimensions.

The company has specialized trailer production for a considerable period and during the war with Germany built these in large numbers to specifications for the United States army service. Now that the company has resumed commercial operations it has largely increased factory facilities and equipment and is prepared to produce the new types.



Model L 3½-Ton Trailmobile Unit Hauledby a Two-Ton Truck a Total Load Capacity of 5½ Tons.

One feature of the design is that the draft of the towing vehicle is upon the frame of the body and the steering is done at the axle, so that there is no influence by spring action upon the steering, which insures absolutely certain tracking. The value of this improvement is that there is minimized side sway and as the trailers run true behind the tractors the wear upon the tires are minimized and minimum power is required for haulage, this affording economy of lubricant and fuel. In addition there is reduction of general operating expense. All of these factors are regarded of importance as they have direct bearing upon service cost.

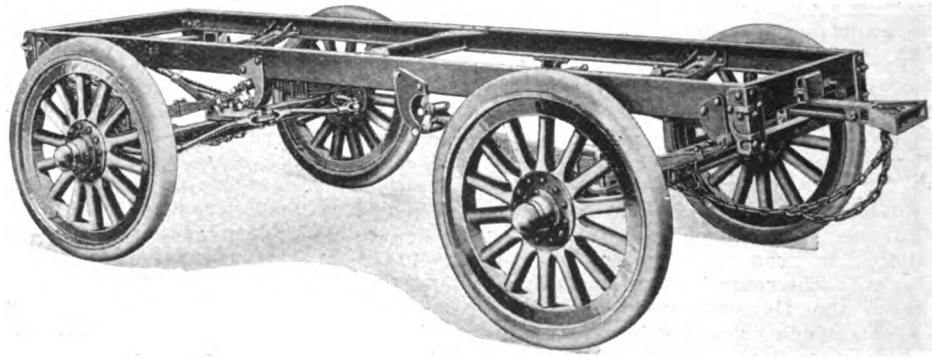
Both Units Have Same Wheelbase.

These two units have the same wheelbase, 88 inches, the width of track of the smaller being 58 inches and of the larger 66½ inches. The body weights allowed for are 1000 pounds and 1200 pounds respectively. The frame of each is 144 inches length and 39 inches width, the bodies being of wood and mounted on bolsters that are secured to the frames. The width of the bodies will depend upon the character of the loads to be carried, but generally these considerably overhang the frames. The elevation of the bodies above the wheels depends upon the sizes of the bolsters, the average construction being with the object of keeping the center of gravity as low as is practical.

The body frames are constructed of steel channel section, four inches width for the 4000-pound unit and five inches width for the 7000-pound unit, with wide webs. The end members are riveted to the side members and the corners are bound with heavy iron brackets outside, and these are reinforced by angle corner plates inside, securely riveted. The cross members are three in number, that at the center being channel section, well gusseted, with two draft beams directly above the axles. The members are hot riveted and well secured. The frames are reasonably flexible.

Frame Mounted on Semi-Elliptic Springs.

The frames are suspended on semi-elliptic springs, the ends of the springs under the center of the frames being shackled while the ends of the springs carrying the frame ends are pivoted in heavy hangers. This is, with reference to the rear springs, reversal of truck practise, in that the forward ends of the rear springs are shackled instead of pivoted. As will be noted the drawhead is so designed that the draft stresses are on the frame, and the steering is done by the axles. With a single unit behind a tractor the draft is by the forward end of the frame and the forward sections of the front springs to the front axle, and through the rear end of the frame and the rear sections of the rear springs to the rear axle.



The Standard Chassis for the Model K Two-Ton and the Model L 3½-Ton Trailmobile Units, Showing the Spring Suspension and the Frame Construction.

The spring action is unrestricted and full resiliency is afforded. When the trailer is reversed the effect of the draft is unchanged, and when a second trailer is drawn the draft of the second is upon the frame of the first, there being, of course, neither driving nor braking stresses upon the axles. The principle is worked out very practically and the results are claimed to be extremely satisfactory from every point of view.

Truck Type of Axles.

The axles are I section drop forgings with heavy steering knuckles, those of the 4000-pound unit being two by 3¼ inches, with wide webs, and those of the 7000-pound unit are 2¼ by 3 7/16 inches. These are truck type and are fitted with oil and grease cups. On these the springs are mounted on substantial pads, those of the 4000-pound chassis being 50 inches long and 2½ inches wide, of nine plates, and of the 7000-pound chassis 50 inches long and three inches wide, 10 plates. The spring hanger and shackle bolts are high quality steel, hardened and ground, and the spring eyes are bronze bushed. Adequate provision is made for lubricating them.

The wheels are wood, artillery type, of second growth hickory, with malleable iron hubs, each having 14 spokes. The wheels are mounted on Bock roller bearings and are shod with solid pressed on truck tires. Those of the 4000-pound chassis are 36 by four inches and those of the 7000-pound chassis 36 by five inches.

Drawbar and Steering Gear.

The corner brackets of the frame carry at either end a supplementary frame member that supports the drawbar, which may be swung transversely between the members within the limitations of the linkage. The drawbar is an I section casting pivoted at the rear end to the draft beam in the frame by a hardened and ground bolt fitted in a bushing. The pivot point is directly over the center of the axle and this in effect establishes a stable equilibrium. The drawhead is a bell-shaped steel casting hinged to the drawbar and fitted with a double pin. When being drawn forward both parts of the pin are inserted through the drawhead and the coupling bar, but when being backed the forward pin is removed. The shape of the drawhead and the special design of the coupling bar where it enters the drawhead is such that the tractor can back the trailer from angles without leverage against the side of the draw head. The hinging of the drawhead provides for any differ-

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ence in levels between the tractor and the trailer.

The coupling bar is a steel casting which at the rear end fits into the drawhead and at the front forms a heavy cap which fits around the end of the bar. The housing is built up to contain a shock absorbing compression spring of special alloy steel. The pull rod is forged steel and extends from the cap of the coupling bar through to the compression spring. The pull rod is forged into an eye at the forward end to take the coupler of the truck and it is free to rock in its cage. A universal coupler is provided to attach to the rear cross member of the chassis frame. This is easily detached and may be transferred from tractor to tractor as needed.

The steering mechanism is patented and it is controlled by the drawbar, to which is attached the steering fork socket and the steering fork, the latter extending to the steering plate pivoted at the center of the axle. The steering plate is connected to the steering arms of the cross rods that connect and operate the steering knuckles, operating the wheels. This is the same construction that is used in the lighter sizes of Trailmobile units. The horizontal movement on the drawbar caused by turning a corner is communicated to the wheels through the steering fork, steering plate, cross rods and steering arms. Being hinged at both ends and with a plunger as an intermediate connection, the steering fork is free to move up and down in the frame and follow positively the action of the springs without affecting the alignment of the wheels.

HAS POSTAL SERVICE BY MOTOR TRUCK.

Because of being handicapped by inadequate railroad facilities, the government experimented by establishing a motor truck postal service between Wilmington and Salisbury, Md. While the two cities are only 100 miles apart, the route has been laid through a section of the eastern shore of Maryland which does not have direct railroad communication. Two trucks are kept so busy more will have to be added. The service is enabling the Maryland farmers to get produce to the city markets. With one relay, an exchange to Centreville, Md., the round trip is made every day between 6 a. m. and 7 p. m., with the result that the handling of the mail is not only facilitated, but produce is in the markets of Wilmington, Philadelphia, New York and other cities in time for the next day's business.

CLAS NOW MANAGER OF LEWIS STEEL PRODUCTS CO.

A. R. Clas, formerly of the Falls Motor Corporation, Sheboygan, Wis., is now manager of the Lewis Steel Products Co., Toledo, O., which has been sold to Detroit and Cleveland men. The company makes tractors and tractor engine valves.

The Brooklyn Commercial Body Co., Inc., has been authorized to increase its capitalization from $1000 to $20,000.

AIRPLANE DELIVERY FOR SERVICE MOTOR TRUCKS.

The Service Motor Truck Co., Wabash, Ind., has brought about the first national adaptation of airplane service to industrial purposes, through arrangement with the Service Aviation Training and Transportation Co. to furnish rapid aerial distribution of repair parts and unusual service demands to distributors and service station of Service Motor Truck Co., located in all parts of the United States, as well as to users of Service trucks who may be engaged in overland hauling.

The aerial service will be handled under contract by the Service Aviation and Transportation Co., a separate organization formed by stockholders of the motor truck concern. J. P. Porter, the chief pilot, was formerly of the Royal Flying Corps, London, and was one of the chief instructors at Love Field Aviation Camp, Texas.

Assistant pilots are Harold C. Brooks and V. P. Hollingsworth, both of whom were formerly associated with Chief Pilot Porter. Oscar Bricker, formerly of Love Field, is in charge of the hangars and landing field.

A 44-acre field has been prepared exclusively for this venture, not only because this is the first of its kind, but because of the unusual connection between the truck industry, the most modern form of heavy duty transportation, and the airplane industry, the most modern form of swift, light duty transportation.

BUILDING DAY-ELDER TRACTORS ON ORDER.

The Colt-Stratton Co., New York City, distributor of Dodge Brothers motor cars and Day-Elder motor trucks, in collaboration with the Day-Elder Manufacturing Co., Newark, N. J., is having built a number of Day-Elder tractors to be used in combination with semi-trailers to fill orders taken for this type of vehicle.

They are especially adapted to lumber work and other materials requiring length of body, and the orders taken by Colt-Stratton for these units are mainly from firms dealing in such materials, although it has become generally understood that the six-wheel combination of tractor and semi-trailer is thoroughly feasible in most every line of work and does not necessarily have to be confined in materials requiring extreme body length.

GMC HAS STRONG SERVICE IN NEW ENGLAND.

The Noyes-Buick Co., Boston, since taking over the distribution of GMC trucks, has largely increased the number of dealers in the New England territory. This organization of GMC dealers comprises 62, all in a position to give service.

HEADS AVERY BRANCH.

The Avery Co. has appointed R. B. Lyman manager of the Madison, Wis., branch. He was formerly at the Aberdeen branch.

Shoe Manufacturer's Trucks Show Big Net Profits.

W. E. Parker, president of the Commerce Motor Car Co., Detroit, manufacturer of Commerce trucks, has received an interesting letter regarding four trucks operated by a shoe manufacturer between Campello, Mass., and Boston, hauling supplies and miscellaneous freight to South Boston and for deliveries in Boston, and returning with supplies from concerns in Boston, and one truck running from Campello to East Weymouth with supplies and from East Weymouth to Boston, returning to Campello via East Weymouth.

The letter shows that the big manufacturer realizes the value of the truck for short hauls, and that he is analyzing the cost. It follows in part:

"The figures which I am to give you cover a period from Nov. 18 to Jan. 1, and during this time we also hauled our completed army shoes to the warehouse of the Depot Quartermaster at Boston, which tonnage helped materially to swell the profits. During this period we hauled approximately 3,000,000 pounds at a cost of $5160, or 17 cents per 100 pounds. This cost also includes two small trucks which pick up the small miscellaneous freight at Boston and deliver it to the larger trucks to be taken to Campello.

"Formerly the Brockton Transportation Co. picked up all our freight in Boston and delivered same to the New York, New Haven and Hartford railroad and they in turn loaded a car for Campello each night. Also we loaded a car at Campello consigned to the Brockton Transportation company at Boston and they in turn unloaded this car and carted the contents either to outgoing freight houses at Boston or delivered to local Boston houses.

"The average cost of this service to us on all goods which we shipped in that way was 35 cents per 100 pounds. As figured above, we carried by the trucks merchandise at the rate of 17 cents per 100 pounds, which would have cost us 35 cents if we had still continued to use the freight service.

"Consequently, I figure a saving of approximately $5300 during the period of Nov. 18 and Jan. 1, which amount practically pays for a five-ton truck. If business keeps up as at present we ought to pay for five trucks in about seven months, which certainly is a very profitable business."

ATLANTA HAS SHIP-BY-TRUCK ASSOCIATION.

Another of the many results from the campaign throughout the country for the development of highway transportation is the organization at Atlanta, Ga., of the Atlanta Ship-by-Truck Association. Its chief aim will be to encourage motor express routes radiating from Atlanta to near-by towns and the immediate rural centers.

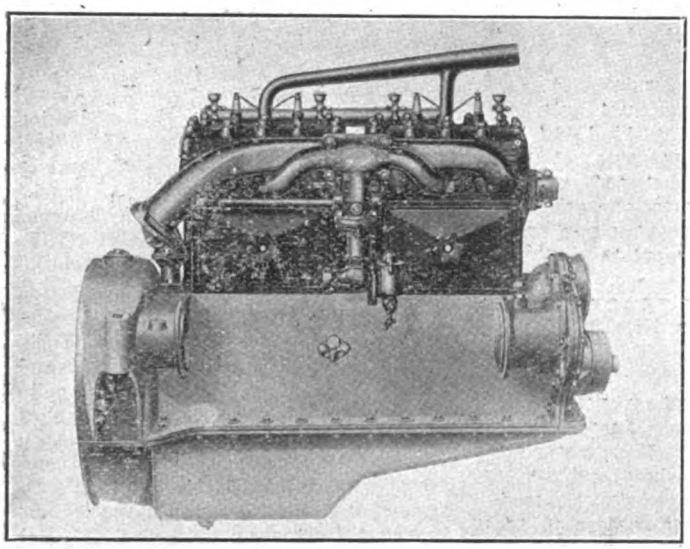
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THREE NEW HINKLEY TRUCK ENGINES

IN ACCORDANCE with its announced policy of producing a complete line of engines, adaptable to all standard sizes of trucks and tractors, the Hinckley Motors Corporation, Detroit, Mich., is devoting its energy in producing three models or sizes of motors.

With the experience gained during the war period, manufacturing Class B truck engines, it has reached the conclusion that this design embodies the best in construction for heavy duty automobile and tractor purposes. The Hinkley Corporation will, therefore, manufacture this type of engine under the name of Hinkley Class B.

In addition the company developed two other models which will be known as HA and HAA, and these are built to the same design as regards appearance and produce similar high efficient results in practise as the Class B engine. This gives a series of three engines, with similar characteristics, rated at 55 horsepower at 1400 revolutions a minute for the Hinkley Class B, 45 horsepower at 1500 revolutions a minute for the HA, and 35 horsepower at 2000 revolutions a minute for the HAA.



The Model HA Hinkley Truck Engine, Showing the Valve Side, That Has a Power Rating of 32.40 by the S. A. E. Formula.

The Class B truck engine has been described at some length and a repetition of this information will not be made.

The HA Model the Larger.

The HA engine is a four-cylinder, four-cycle, water cooled, L head type, with the cylinders cast en bloc, with the water jacket integral and the head of the water jacket open, this insures complete clearing of the water chambers and perfect freedom of the water circulation.

The cylinders have a bore of 4½ inches and stroke of 5½ inches, giving a piston displacement of 350 cubic inches. The cylinders are designed with extra large water circulation chambers and these reach well down the length on the outside of the bore so that a good absorption of heat from the cylinders is obtained.

The head plate is cast with a deep central channel above the heads of the cylinders, this insuring direct movement of the water through the outlet at the forward end of the channel. The heads are each retained on the cylinders by studs of ample size, each being fitted with lock washers.

The valves are at the right side of the blocks, the valve bushing bearings being suitably ribbed to obtain strength and yet leave ample cooling space for the circulating water. The valves are two inches in the throat and operate in extra long renewable bushings. The valve tappets are of the roller type and these are made extra large in diameter.

Pistons and Crank Case.

The pistons are made from cast iron and each is fitted with three compression rings. The wristpin is made from steel tubing and held in the correct location in the piston by a threaded turned pin which is screwed in the lower boss and fits into a reamed hole in the inner or top boss of the piston.

The wristpin end of the connecting rod is provided with a bushing, machined to suit the pin diameter and held in the connecting rod with a dowel.

The crank case is made from semi-steel, cast in two sections, the upper half having two transverse ribs on each side to carry the main bearing. The lower section is shallow at the forward end to afford axle clearance, and the rear end is deep to form a reservoir for the oiling system. Both sections have forward extensions, forming the housing for the gearset, and rear extensions that form the bell housing for the flywheel and to which the housing of the clutch is fastened.

The crank case is designed for three-point suspension, the forward support being a trunnion on the gear case cover. The rear of the engine is suspended on two deep arms integral with the bell housing of the flywheel, and the diameter of the housing is such that the arms are extremely short and are so formed that the top of the bell housing makes a complete arch construction from the top to the tips of the arms. This adds considerably to the normal strength of the case structure. The manner of suspension insures sufficient flexibility to withstand all stresses of frame distortion.

Crankshaft and Reciprocating Parts.

The crankshaft is a three-journal type, made from a drop forging, formed with the flywheel flange integral. The shaft is 2¼ inches diameter and with crankpins 2½ inches long, and the main bearings are, front, 2¼ inches diameter and 2½ inches long; center, 2⅜ inches diameter and 3½ inches long, and rear, 2⅜ inches diameter and 3½ inches long, a total of 9½ inches.

The connecting rods are made from drop forgings, and are of the four-bolt construction, having alloy steel bolts to hold the caps in place. The rods are I section and the wristpin bearings are 1¼ inches diameter and 1⅞ inches long. The camshaft is also a three-bearing type, made from a steel drop forging, with the cams integral. The bearings are made of a generous size both as regards diameter and length. The largest bearing is in front with the center bearing smaller in diameter and the rear again smaller, so that the shaft can be removed from the front of the engine case, thus avoiding the disassembling of the clutch and other rear elements.

At the rear end back of the bearing is a skew gear that drives the shaft of the oil pump. The thrust from the gears is carried to the front end of the shaft and is taken by a spring backed hard steel plunger seated in a socket in the cover of the timing gearset housing.

The timing gearset consists of five gears, one of which is pressed on the crankshaft, from which the camshaft gear at the right side drives a gear for the generator, and at the left side the crankshaft gear drives the water pump and magneto shaft. The idler gear runs in double, babbitt lined, large bronze shell bearings. The camshaft gear is bolted to the camshaft flange with four alloy steel bolts.

The Pre-Heating Manifold.

The form of the exhaust manifold is conventional, except that at the center is a rectangular opening. The intake ports are below the level of the exhaust ports, so that the intake flanges can be attached and the intake manifold come out and up with an easy sweep. Where the manifolds join there is a rectangular face on the intake manifold, which seats into the opening in the exhaust manifold, and the intake manifold at this point is formed to have a box shape. The two manifolds are bolted together with a gasket at the joint. When the engine is running the exhaust gases play upon the inner face of the box seated in the exhaust manifold, where the two branches of the intake manifold connect with the riser, containing the governor throttle, between the intake and the carburetor flange.

The governor is integral with the engine and is connected by means of a short horizontal shaft to a throttle in the intake manifold just above the flange to which the carburetor is bolted. The throttle operated by the governor is the usual butterfly type.

Lubricating and Cooling Systems.

The lubrication is a pressure system. The oil pump, which is located at the extreme right rear end of the oil chamber is a vertical type, and is driven by a gear on the camshaft. The base of the crank chamber over the oil chamber is a sheet steel plate retained by screws. The pump is in a well separated from

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the crank chamber by a cast wall that prevents oil falling from the bearings entering it without filtration. The oil pan being integral with the crank case the case can be dropped when desired without disturbing the pump. The oil is forced by the pump through a complete copper tubing system, clipped to the inside of the crank case and carries the maximum oil pressure to all the needed points. To maintain constant pressure there is an automatic regulating relief valve.

The engine is cooled by a circulation of water, forced through the cylinders by a centrifugal pump. The water outlet header has two connections of tubular construction, to secure the proper water distribution to each cylinder group. A bracket is provided so that a fan of standard construction may be attached. Provision is also made for starting and lighting equipment, also magneto or battery ignition. The intake manifold is designed with a flange so that any standard 1¼-inch carburetor may be installed.

The maximum horsepower developed by the engine is 45 at 1500 revolutions a minute, and the turning effort is 1775 inch pounds at 1350 revolutions a minute. The approximate weight of the engine is 800 pounds, the oil capacity is eight quarts and the fuel consumption is claimed to be approximately 3½ gallons per hour at maximum load. This motor is suitable for three to four-ton trucks, or two to three-plow tractors.

Model HAA Engine a Smaller Type.

The model HAA engine follows the same design as described, the size of the elements being smaller, and for this reason only note is made of the important dimensions of this model.

This engine is suitable for one to 2½-ton trucks or one to two-plow tractors. The motor is a four-cylinder, four-cycle, and when used for one to 1½-ton truck the bore is 3¾ inches, with a stroke of 5¼ inches, giving a piston displacement of 232 cubic inches. The cylinders may be, however, bored to four inches with the same stroke of 5¼ inches, giving a displacement of 264 cubic inches. The motor is then powerful enough for a 1½ to 2½-ton truck. The pistons are again made of cast iron and machined for three compression rings.

The valve diameters are 1¾ inches in the throat and the valve tappets are also of the roller type, these being extra large. The connecting rod bearings are 2⅛ inches diameter and 2¼ inches long at the large end and 1⅛ inches diameter by 1¾ inches long at the small end.

The drop steel forged crankshaft is also a three-journal type with the front bearing 2⅛ inches diameter and 2¼ inches long, center 2¼ inches diameter and three inches long, and rear 2¼ inches diameter by three inches long.

The intake manifold is equipped for any standard one-inch carburetor having S. A. E. standard flanges, operating in conjunction with the hot spot manifold.

An extra large anchorage plate is again provided for a fan installation Provision is also made for generator, starter, magneto or battery ignition equipments.

The maximum horsepower of the engine is 35 at 2000 revolutions a minute. The turning effort at 1350 revolutions is 1550 inch pounds.

The oil capacity is approximately eight quarts and the fuel consumption is about three gallons per hour at maximum load.

It will be seen that with these three sizes of engines vehicles from one to six-ton inclusive are provided for or farm tractors from one to four-plow inclusive.

It is the purpose of the manufacturer both in the design and manufacture, to provide and maintain the high standards demanded by the government in the class B engine. It can be seen how well this has been carried out on both the HA and HAA engines when it is said that these show economy results under tests of better than six-tenths of fuel per horsepower under maximum load.

GUARANTY PRODUCTION FORCE HAS BEEN DOUBLED.

Samuel W. Prussian, owner of the Guaranty Motors Co., Cambridge, Mass., states that so many orders have been booked for Guaranty truck units that it has been necessary to more than double the production force. The brisk business applies to Guaranty units for converting old and new passenger cars into 1¼, two-ton and three-ton trucks, and also to the Guaranty Power Hoist.

"So many unit makers have gone out of business that hardly a day passes that we are not called upon to furnish parts for some obsolete model," said Mr. Prussian. "In this respect the fact that our business is on such a firm foundation, and that our plant is so accessible, is a strong feature in our favor."

KAUFMANN-STOWERS OPENS A BRANCH IN BRONX.

The Kaufmann-Stowers Co., Inc., distributor of Nash cars and trucks, Premier passenger cars, Titan trucks and Warner trailers, has opened a new branch at 2468 Grand Concourse, the Bronx, New York City. S. H. Kelley is sales manager of the company.

MOTOR EXPRESS LINES AROUND NEW YORK CITY.

The Colt-Stratton Co., New York distributor for Dodge Bros. motor cars and Day-Elder motor trucks, is meeting success in its efforts in the development of rural motor express lines around New York City. The most successful is the Long Island Rural Motor Express Co. The type of Day-Elder trucks used is the six-ton worm drive chassis with special type of express body.

Originally the Long Island Rural Motor Express Co. ordered 10 of these trucks and it has already repeated with order for five more. The company is using also some two-ton Day-Elder trucks for pickup work, and from all indications within a very short time it will probably install more trucks of the same make to keep pace with increasing business.

The headquarters is at 1845 Broadway and it is now operating to all points on the north and south shores and in the center of Long Island. It is in a position to quote attractive rates on merchandise going either way. A regular schedule is maintained and the service is constant and dependable.

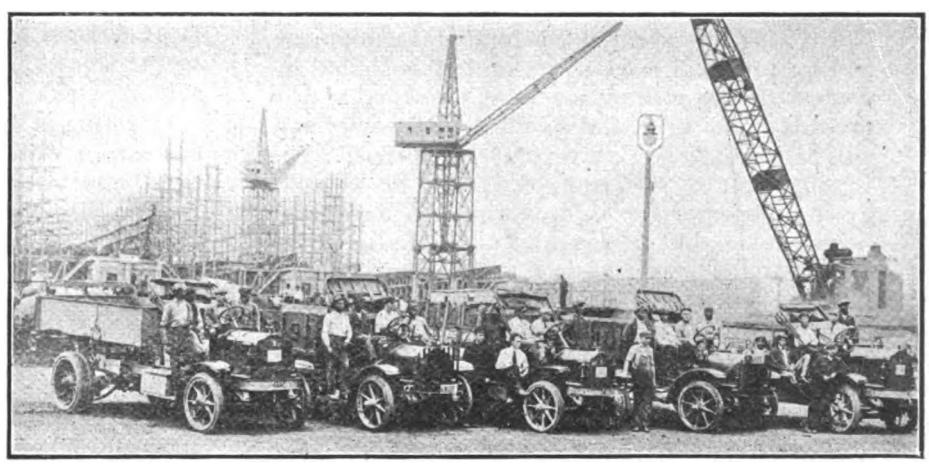
J. Kent Warden, president of the Long Island Rural Motor Express Co., speaks in the highest terms of the service of the Day-Elder trucks and of that of the Colt-Stratton Co. and this confidence seems to have been fully justified, as is evidenced by his repeat orders for more Day-Elder trucks.

$100,000 BONDS TO MOTORIZE FIRE DEPARTMENT.

The City Council in Allentown, Pa., has passed an ordinance providing for a bond issue of $180,000, of which $100,000 will be used for the complete motorization of the volunteer fire department.

BUYS TRUCK STREET FLUSHER.

Ft. Wayne, Ind., has contracted with the Gramm-Bernstein Motor Truck Co. for a motor truck power street flusher for $6300. It will have a five-ton truck chassis.



Fleet of White Heavy Duty Trucks with End-Discharge Bodies, Used by the Virginia Shipbuilding Corporation, Alexandria, Va., for Construction Work.

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PLATE XXXII.

GENERAL TRUCK AND CAR GARAGE

A Structure Designed for Enclosure on Three Sides, to Utilize Fully All Floor Space and Have a Maximum Main Floor for Vehicle Storage.

Designed by the Architectural Department of the Automobile Department.

HERE is a real novelty and yet a very practical one, for a general garage for motor trucks and pleasure cars. It is in the shape of an octagon. Many will ask what advantage this type, or shape, has over the square, or rectangular figures. First of all, a car may be driven in, circuiting around until its proper place has been found, and then a direct reverse into position. Cars may also be placed directly to their stands from the turntable at the center of the floor, thus eliminating unnecessary manouvering. A large number of cars may be stored, owing to the fact that there are no "dead" ends. Again, cars may be placed two deep, as all that is necessary is the freedom of the turntable, as shown.

The accompanying illustration is for a structure one-story high, size 100 by 100, general dimensions, or the area of land could be the same. At the rear and at the left will be found a repair shop, ample in size and fully equipped to handle work of any nature. A large pit is shown, this being advantageous on numerous occasions. There is shown a large closet for storage of movable articles, such as tools. Work benches of ample size are also provided.

A stairway leads from this department to the boiler room, situated beneath it. Light and ventilation are afforded by a huge skylight, forming the entire roof of the shop.

At the right of the repair shop and also in the rear of the building, will be found the machine shop. A passage way runs between the machine shop and the repair shop, affording direct communication without having to pass through the general garage each time one desires to visit either one of these departments.

The machine shop is designed to have sufficient area for essential machine tool equipment, and for practical work of all kinds this should include lathes, a milling machine, a shaper, a drill press, a radial drill, and in addition a power saw will be found to serve a very useful purpose. The arrangement of the equipment will be planned by the owner or the shop foreman to best serve requirements, but suggestions are included in the plan that may be a basis for judgment. There is a work bench at the rear, and in connection with the shop is a spacious hand tool closet, which will have a distinct value, for with this responsibility can be established with reference to station property and the tools protected against loss or damage by unauthorized use.

Attention is directed to the lighting of this shop and the repair shop, which are both lighted and ventilated by large metal skylights nearly the size of the floors. This construction was adopted because the building may be surrounded on all three sides, and wall lighting may not be possible. The ventilators are constructed in the frames of the skylights and can be controlled perfectly. The ventilators and skylights should be made of first class galvanized metal and built by a reliable maker.

In the forward compartments there is an office on one side, while opposite is located the stock and oil room; also there are toilets for the men in the shop. The office is amply large for a garage of this size, being well lighted and having an entrance from the street leading off the porch. In connection with the office there is a toilet and wash room for the office help. The stock and oil room is equipped for handling accessories and parts of all kinds; also various qualities and kinds of oils, as this item is one of very great importance and should receive due consideration. This department also has a separate entrance from the street. A gas pump is located on the sidewalk, so transit trade may be accommodated with as little inconvenience as possible.

Construction is of a slow burning nature; in fact, it is fireproof outside of the planking in the roof and wood fittings around the different shops. Brick has been used throughout for general construction with a sub-structure of concrete. Light steel trusses with steel purlins comprise the general frame up of the roof. Plank is used for a covering on which is laid a standard form of roofing, there being several that can be used with entire satisfaction. Windows are of a standard make, steel sash type, double hung, as shown. A large door of an electrically operated type slides to the sides on opening, one-half going to either side.

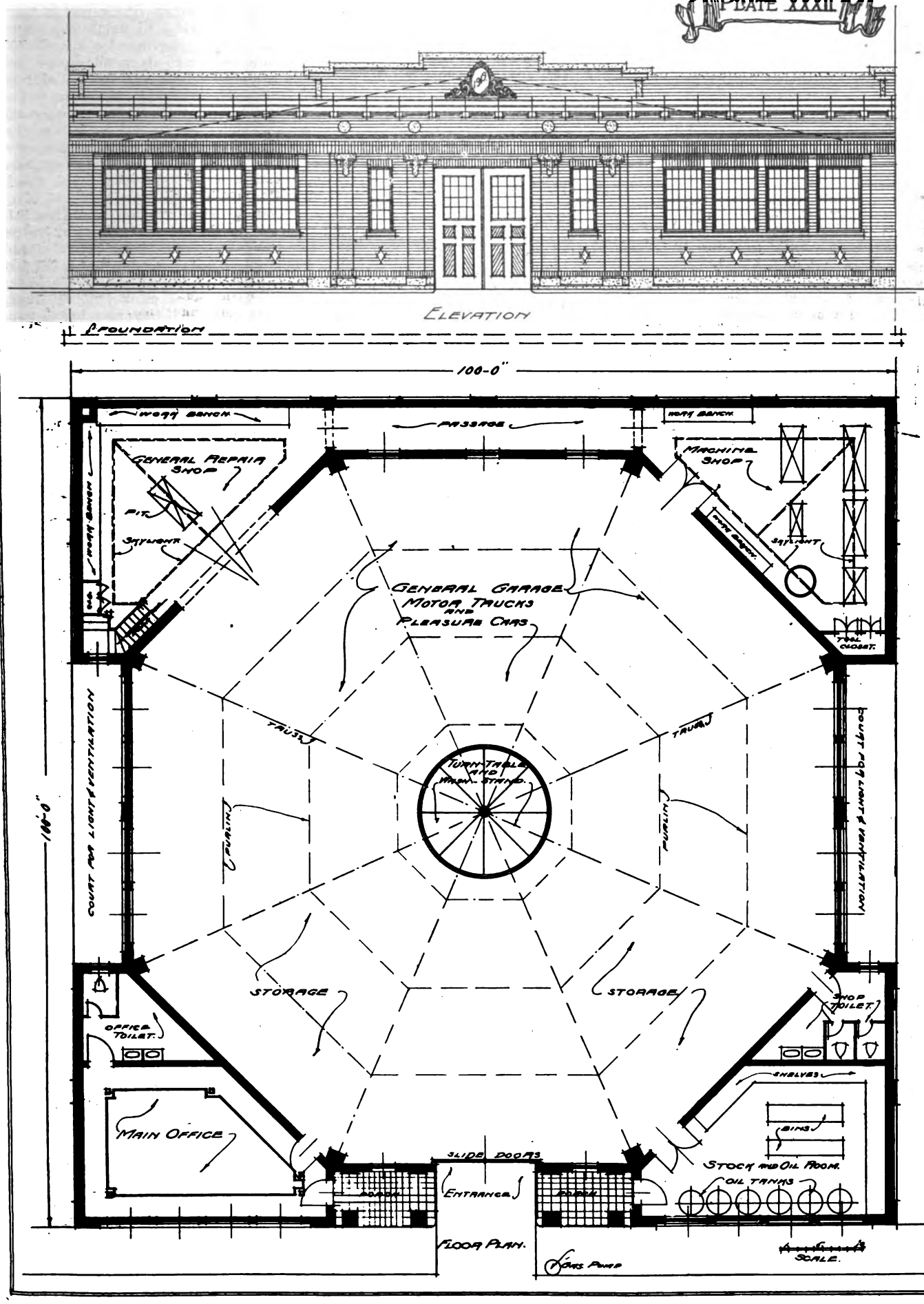
Heating is by steam wall radiation, using pipe system, or wall radiators if owner prefers to expend money for them.

The cost of such a building would be between $10,000 and $15,000, owing to the manner in which it is fitted and equipped and the grade of materials used.

Any information regarding this structure can be had at request made to the Architectural Department, and the requests should specify the precise character of the detail desired, so that facts and not generalities can be stated, and the inquirers can be the better served.

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PLATE XXXII



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GMC SALES $326,044,755.95 IN 1918

THE annual report of the General Motors Corporation for last year shows that the net sales of the corporation and subsidiary companies (not including the sales of the companies purchased during the year prior to their acquisition) amounted to $269,796,829.78. The net sales of all companies for the 12 months ended Dec. 31, 1918, amounted to $326,044,755.95. The number of cars, trucks and tractors sold during the year was 246,834.

The report shows net profits after depreciation charges, but before Federal taxes, of $35,504,576. From this amount there was a deduction of $20,113,548 for war taxes and other extraordinary expenses, leaving a balance of $15,391,028 available for dividends, of which $14,825,530 applies to the General Motors Corporation proper. The preferred dividends for the year were $1,180,901, and the dividends on the newly created debenture stock for five months of the year were $739,566.

After provision for these dividends there was a balance left for the common shares of $12,905,063, or the equivalent of $8.75 a share on the common capitalization of $147,379,900. In the preceding year the company earned at the rate of $34.19 a share on the common capitalization, which at the close of 1917 was $76,873,300. An average of the amount of common stock outstanding during last year shows $93,644,200 and on the basis of this the amount applicable for dividends was $13.80 a share. The common dividends for 1918 amounted to $11,273,310.

The allowance made for taxes, $20,113,548, was far heavier than the allowance in the preceding year, when $6,901,889 was set aside for this purpose. The balance sheet shows that the net working capital at the close of last year was $149,902,028, which compares with a working capital of $64,554,766 in the report for 1917. The report shows current assets of $183,415,828 and current liabilities of $33,025,336. The balance sheet also shows that inventories, based at cost or less, amounted to $91,137,513, or nearly double the same item in 1917.

Some of the chief items of the income account as compared with 1917 are as follows:

	1918	1917
Net profits	$35,504,576	$34,634,754
War taxes	20,113,548	6,901,889
Surplus in common	12,905,063	26,285,952

Of the 23 operating units, 18 were engaged on government contracts. At the time of the armistice orders and contracts on hand exceeded $50,000,000. The total number of cars, trucks and tractors sold during the year was 246,834.

The report states:

"The net sales of the General Motors Corporation and subsidiary companies for the 12 months ended Dec. 31, 1918 (not including the sales of the companies purchased during the year prior to their acquisition), amounted to $269,796,829.78. The net sales of all companies for the 12 months ended Dec. 31, 1918, amounted to $326,044,755.95. The number of cars, trucks and tractors sold during the year was 246,834.

"The pay rolls for the year 1918 aggregated $52,500,000. The number of employees in the service of the corporation and its subsidiary companies on Dec. 31, 1918, was 49,118.

War Work.

"Concerning the work done by the corporation on war products, a word at this time may not be out of place. Of the 23 operating units, 18 were engaged on government contracts. The gross value of the products actually completed was approximately $35,000,000. At the time the armistice was signed the orders and contracts in hand exceeded $50,000,000. In the execution of these various contracts too much credit cannot be given the executive heads and employees who, in many instances, succeeded in reaching volume production in record time, regardless of seemingly insurmountable difficulties.

Ambulances and Trucks.

"The United States had been at war hardly a month when the truck division received a large order for its model 16 chassis to be used for ambulance mounts. During the Mexican trouble this chassis, in actual service, has proven to be especially well adapted to ambulance work and was adopted by the Medical Corps for all motorized units. In the summer of 1918, after having spent months on the design of a new chassis for universal military service, the army finally acknowledged the sterling worth of the GMC model 16 chassis by making it the standard three-quarter-ton chassis for all arms. General Motors furnished over 5000 of these vehicles.

Officers' Cars.

The Quartermaster Corps, supplying the majority of the vehicles used by all branches of the service, early adopted the Cadillac as the standard officers' car. A total of 2350 Cadillac cars, practically standard in all respects, were supplied.

"During the year the corporation acquired the following interests: All the assets of Chevrolet Motor Co., a Delaware corporation (except 450,000 shares of General Motors Corporation common stock), as of May 2, 1918, paying therefor $28,268,400 par value of common stock. All of the common capital stock ($1,000,000 par value) of the Janesville Machine Co., Janesville, Wis., July 1, 1918, paying therefor $1,000,000 in cash. A controlling interest on July 1, 1918, in the no par value common stock of the Scripps-Booth Corporation, paying therefor through an exchange of securities on the basis of one share of General Motors common stock for six shares of no par value Scripps-Booth stock. All of the capital stock of Chevrolet Motor Co. of Canada, Ltd., the McLaughlin Carriage Co., Ltd., and the balance of the capital stock of the McLaughlin Motor Car Co., Ltd., not already owned by the corporation, as of Nov. 1, 1918, paying therefore $4,900,000 par value common stock and $550,000 in cash. All the assets of United Motors Corporation, subject to liabilities, as of Dec. 31, 1918, paying therefor $29,869,200 par value debenture stock, $9,956,400 par value common stock and 106,000 shares of United Motors stock owned by General Motors Corporation; plus an amount in cash equal to the dividends on the debenture and common stock subsequent to Oct. 1, 1918. All the preferred and common stock of Lancaster Steel Products Co. and $1,566,000 par value of General Motors debenture stock as of Dec. 31, 1918, paying therefor $1,617,500 par value common stock and $500,000 par value debenture stock. All of the ($387,100 par value) Harrison Radiator Corporation preferred stock as of Dec. 31, 1918, paying therefor $387,100 par value debenture stock and $38,710 in cash.

Outlook for This Year.

"The corporation has adopted a bonus plan under which stock of the corporation is distributed each year as a reward to its employees, including employees of subsidiary companies, who have contributed to its success in a special degree, by their inventions, ability, industry, loyalty or exceptional service.

"The outlook for the coming year is most promising. Since the signing of the armistice and the subsequent liquidation of the war contracts, which your corporation was engaged in, the plants and facilities have been reconverted in an incredibly short time to their regular lines of activity, and as a result the manufacturing operations are considerably advanced, as is evidenced by the showing for the first quarter of 1919; the number of cars, trucks and tractors sold to March 31, 1919, inclusive, being 82,456; the net profits before deducting Federal taxes are estimated at upwards of $20,000,000.

"The preferred dividends have been paid during the year at the full rate of six per cent. In the purchase of the United Motors assets, the debenture stock which was delivered in part payment thereof, carried with it an amount in cash equivalent to the Nov. 1 dividend of 1½ per cent.

"Regular dividends of three per cent. quarterly were paid on the common stock during the year. The number of stockholders of the corporation is in excess of 12,000 at this date.

"The General Motors Corporation is to be congratulated upon the association with the E. I. duPont de Nemours & Co., resulting from the acquisition of a large stock interest by the company which insures financial stability and the cooperation of the finest engineering organization in the country."

TO DISTRIBUTE CLEVELAND TRACTOR.

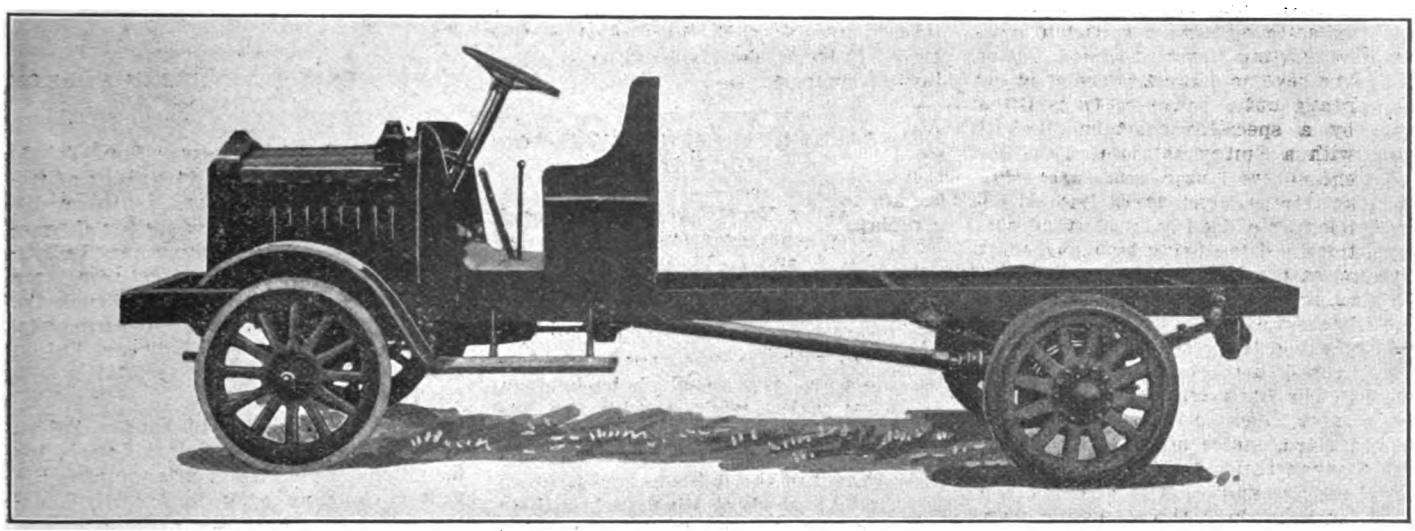
The Hoosier Tractor Co. has opened a salesroom at the point of Capitol and Indiana avenues, Indianapolis, to distribute Cleveland tractors. A. C. Webb is president and general manager.

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NEW COLUMBIA ONE TON TRUCK

HAVING satisfactorily developed a new design for a one-ton truck chassis, the Columbia Truck and Trailer Co., Pontiac, Mich., has begun production of this unit and the manufacturing plan comprehends building it in considerable numbers. The chassis is conventional in all respects so far as principles and practise are concerned, but it differs with all machines of its load rating in that all of the construction units are larger and have greater factors of safety, so that the buyer can consistently expect unusual service life and exceptional operating economy with reference to maintenance.

The foregoing statement should not be construed to mean that the chassis is heavy—at least to such an extent that the consumption of fuel and lubricant will be large as compared with machines of similar rating. It is emphasized, however, as the engineering has been with a view of obtaining increased service and



Side View of the New Columbia One-Ton Truck Chassis, Driven by a Unit Power Plant and a Russel Internal Gear Axle, with Complete Equipment.

no more, and probably less, expense because of the attention given to proportioning of parts and the quality of the materials. Much care has been directed to assembling, the bolts and rivets being large to insure against wear from vibratory stresses, and a primary purpose has been to obtain equalized structural strength. The constructing engineer has undertaken to build what will have truck endurance and has sought to do this by provision for assembling. Statement is made that the units are generally of sizes used for 1½ and two-ton chassis.

The weight of the chassis is approximately 2800 pounds and the loading space is so designed that 80 per cent. of the load is carried on the rear axle. The wheelbase is 126 inches, but when the chassis is used as a tractor with a semi-trailer or trailer units the wheelbase is 96 inches, this reduction of length increasing its mobility and utility in limited working areas with no sacrifice of power.

Engine a Continental "Red Seal."

The engine is a Continental "Red Seal" four-cylinder, water cooled, four-cycle, L head type, having cylinder bore of 3¾ inches and stroke of five inches, that is rated by the S. A. E. formula at 22.5 horsepower, but which is claimed by the maker will develop 34 horsepower at approximately 2000 revolutions. This is combined with a dry plate clutch and a three-speed ratio transmission gearset as a unit power plant.

The cylinders are cast en bloc with the water jacket integral, with the head of the jacket open, from a special grade of gray iron, and with this construction the water chambers are uniform as to wall thickness and the passages are free and insure thorough circulation of water. The jacket head carries a large water outlet manifold located centrally so that there is a rapid flow of water across the combustion heads of the cylinders. The head is retained with a series of cap screws.

The engine crank case is in two sections, the upper being cast aluminum and the lower of pressed steel. The former has a heavy web for the center main bearing and there are forward and rear extensions. The forward extension, with a cover, houses the timing gearset, and the rear extension, with a cast aluminum lower section, houses the flywheel. The support arms of the engine are cast integral with the upper half of the crank case. The pistons are cast from the same metal as the cylinder block and are grooved for three diagonal split rings, and the skirts are grooved to better distribute the lubricant and prevent oil leakage.

Details of Engine Construction.

The crankshaft is a three-journal type, drop forged from special steel with the flywheel flange and thrust flanges at either side of the center main journal integral. The shaft is heat treated and carefully ground. The camshaft is a carbon steel drop forging with the cams integral. This is annealed and heat treated to harden it. The cams are ground with especial care. The connecting rods are heat treated I section drop forgings, the caps of which are retained by nickel steel bolts and locked nuts. Much care is taken in boring the connecting rods and piston to obtain accurate diameters and alignment of bores. The wristpins are hardened steel tube seated and locked in the piston bosses. The main and connecting rod bearings are nickel babbitt in bronze cages. The camshaft bearings are white bronze and the wrist pin bores of the connecting rods are bushed with phosphor bronze.

The timing gears are helically cut and are practically noiseless when driven. The gearset consists of crankshaft, camshaft and pumpshaft gears. The valves are nickel steel heads and carbon steel stems, electrically welded, and are interchangeable. They operate in long guides. The valve tappets are a mushroom type, ground to size, and they are fitted with adjusting screws and locking nuts. The tappets operate in renewable guides. The valve mechanism is enclosed by two cover plates that are retained by studs and nuts.

Cooling and Lubricating System.

The engine is cooled by a thermo-syphon circulation of water through the cylinders and a Long radiator with cast tanks, the top tank being finned, which is assembled with series of bolts, and which can be easily disassembled in the event of repair being needed. The cooling section is large capacity and is unusually substantial. Radiation is insured by a fan mounted on an annular ball bearing on an adjustable bracket on the forward end of the cylinder block that is driven by a V belt from a pulley on the forward extension of the camshaft. The lubrication system is a combination force feed and splash, the oil being drawn from a screened well in the reservoir by a horizontal plunger pump driven by an eccentric from the camshaft and forced through copper tube to the rear main bearing and the timing gearset. The excess oil drains to the base of the crank chamber and thence is distributed by splash to the center and front main bear-

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ings, the cylinders and pistons, wristpins, cams and valve tappets. The camshaft bearings are lubricated from pockets cast in the case that traps the oil. The drainage from the crank case returns to the oil reservoir. The oil pump and the sump screen can be quickly removed for cleaning and the reservoir may be drained and flushed. Access to the main bearings and connecting rod bearings may be obtained by removing the lower section of the crank case.

The engine is equipped with a Shakespeare carburetor fed by gravity from a gasoline tank under the driver's seat, with a stove connected to the exhaust manifold, and the source of ignition current is a Dixie high-tension magneto. The engine is controlled by a Pierce governor that limits the speed to 18 miles an hour. The engine is supported at three points and the radiator is mounted on a series of eight helical springs that protect it against vibratory and chassis distortion stresses.

Power Transmission System.

The clutch is a Borg & Beck dry plate construction, assembled with a Covert selective sliding gear transmission gearset having three forward speed ratios and reverse. The gearset is designed for heavy duty. The power is transmitted by a specially designed tubular shaft with a Spicer universal joint at either end to the Russel rear axle, this being an internal gear driven type, the load being carried by a dead axle of round section, and the drive being by a jackshaft mounted at the center, with the ends of the housing carried by the brake flanges. The wheels are driven by pinions at the ends of the driving shafts and internal gears housed in the brake drums on the wheels. The front axle is a Shuler product, a steel I section drop forging, heat treated, the spindles of which are fitted with Timken roller bearings. The driving, backing and torque stresses are taken by the springs, the Hotchkiss plan of drive being adopted.

The frame is a pressed steel channel section, five inches width, with heavy webs, that has five cross members, strongly reinforced and gusseted. The front member is removable to reach the engine, and the radiator is protected by a heavy bumper on the ends of the frame side members. The frame is mounted on semi-elliptic springs, a product that is guaranteed for two years, and the eyes are bronze bushed. The front set is 40 inches long, 2½ inches wide; rear set is 48 inches long and 2½ inches wide. The wood, artillery type wheels are a Hayes product, the forward set having 12 1¾-inch solid tires forward and 32 by four-spokes. The wheels are shod 32 by 3½-inch solid tires forward and 32 by four-inch solid tires rear, and pneumatic tires may be fitted as extra equipment.

The Chassis Control Members.

The steering gear is a worm shaft and worm wheel type, with ball thrust bearings, having an 18-inch hand wheel, and on the column are mounted the ignition and throttle control levers. The steering column is at the left side. The control is by foot pedals for the clutch and the service brake, the ignition and throttle levers on the steering wheel and the emergency brake and gear shifting levers at the center of the floorboard. The service brake has external contracting shoes and the emergency brake internal expanding shoes, both operating on and in the drums on the rear wheels. Both brakes are fitted with equalizers. Much care has been given to lubrication and obtaining accessibility for repairs and adjustment.

The dash and the driver's seat is a one-piece steel construction that has the merit of light weight and ample strength. At the right side of this is a large space for tools. On the dash are the carburetor adjustment lever, an ignition switch and a Klaxon horn so mounted that the horn bell is under the hood, projecting through the dash.

The standard equipment includes the driver's seat, cushion, lazy back, Dietz oil dash and tail lamps, set of tools and jack. The upholstery of the cushion and back is leather. The price of the truck chassis f. o. b. Pontiac is $1750. Statement is made that a considerable number of the parts used in this truck are interchangeable with those used in the model E truck chassis built by the Columbia company.

NEW SALES REPRESENTATIVES FOR DUPLEX.

The Duplex Truck Co. has appointed H. P. Baer zone representative for sales zones No. 4, and L. W. Brownrigg, zone representative for sales zone No. 3. Mr. Baer came to the Duplex company from the Vim Truck Co. Mr. Brownrigg was connected with the War Department during the war, prior to which he held an executive sales position with the National Carbon Co.

The Duplex company announces the appointment of the following distributors for Duplex four-wheel drive truck in their respective territories: T. G. Young, 1000 Pike street, Seattle, Wash.; Barber-Potter Motor Co., Albuquerque, N. M.; W. C. Thomas, 921 Main street, Jacksonville, Fla., and Wilson-Barber Auto Co., Sioux Falls, S. D.

GASOLINE TRADE FIGHT IN SOUTH HALTED.

Motor car owners had a merry time down South recently where there was a gasoline price war. Gasoline dropped to 15 cents in New Orleans and to 11 cents a gallon in Memphis. After a week's battle the refilling stations of the Standard Oil Co., Gulf Refining Co. and Liberty Oil Co. advanced the price to 23 cents, the same as charged before the trade fight. The price cutting was generally throughout the South. Chattanooga, Tenn., and Knoxville consumers received advantage of it.

NEW PHILADELPHIA HOME FOR FULTON CO.

The Fulton Truck Co. of Philadelphia has leased for a term of years the entire service and garage building, having 7200 feet, at 131-33 S. 24th street.

KISSEL PREDICTS WIDER USE OF TRUCKS.

President G. A. Kissel, president of the Kissel Motor Car Co., Hartford, Wis., says transportation developments of the last few months indicate a wider use of the motor truck than even during the strenuous days of 1917-18.

"The recent increase of minimum car loads made by the railroad administration is bound to considerably increase the number of less-than-carload users, as well as cut down the small single car load buyers," he says. "This, to my mind, will make a certain class of business houses, such as wholesalers, jobbers, small manufacturers, millers, small mill owners, department store owners, merchants and retailers, turn to motor trucks to make deliveries to distant customers, as well as to bring in supplies from manufacturing and shipping centers."

Mr. Kissel believes the time will be hastened when the operation of trucks will be on a scientific basis, systematized and standardized as to loads, schedules, rates, operation, maintenance, service, etc.

CAPT. WEBB AND STUTZ IN FULTON FIRM.

Capt. A. C. Webb, former Pope-Toledo racing star, America's first builder of motor driven fire engines and southern district manager of the Studebaker Corporation, and Harry Stutz, prominent Indianapolis automobile manufacturer, are members of the Fulton Motor Truck Co. of Indiana, recently formed in Annapolis, through the efforts of William Fulton Melhuish, Jr., president of the Fulton Motor Truck Co.

The new company will handle Fulton 1½-ton trucks and the Fulton Locomotor in Indiana. Capt. Webb, after joining the Fulton company prior to America's entry into war, became a captain in the Ordnance Department, in charge of army tank and tractor building, with headquarters in Indianapolis.

SAYS BOSTON NEEDS MORE FIRE APPARATUS.

Fire Commissioner John R. Murray of Boston has informed Mayor Peters that "last year because of the break down of motors, etc., large areas of the city were left unprotected or protection was reduced to a minimum because there was no reserve apparatus to substitute for that which was being repaired." An appropriation of $100,000 for motor apparatus, in addition to the amount of approximately $95,000 on hand, is requested.

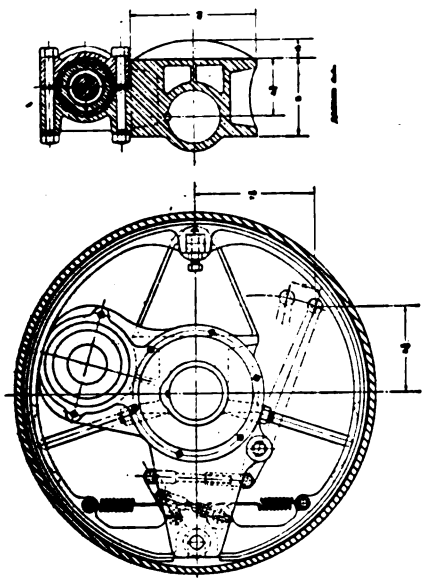
FORM $500,000 TRUCK COMPANY IN BAY STATE.

The Walker-Johnson Truck Co., Woburn, Mass., motor vehicles, has been incorporated with $500,000 capitalization by Watson J. Walker, Danvers, Mass.; Winslow P. Burhoe, Reading, Mass.; William Perkins, Plympton, Mass.; Arthur V. Harper, Weymouth, Mass., and Walter H. Wilcox, Woburn.

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NEW RUSSEL HEAVY DUTY AXLES

ANNOUNCEMENT is made by the Russel Motor Axle Co., Detroit, that it has perfected a new design of internal gear drive axle for heavy duty trucks and that the manufacturing plan comprehends the production of this unit in considerable numbers. The Russel company has been active in the industry for years and for nearly five years has specialized internal gear driven axles for trucks. It has built these to a standard



Cross Section Showing the Brake Mounting of the New Russel Heavy Duty Axle.

design that is distinctive, and the Russel axles are widely known as thoroughly dependable construction units practically throughout the world.

The axles differ from other types of internal gear axles in that the load carrying or dead members are round section steel drop forgings, claim being made that this form is better adapted to this service than rectangular or I section, and that it will endure heavier loads because of its form. The jackshaft is mounted ahead of the main axle, so that the centers of the driving shafts are slightly above the centers of the wheel spindles.

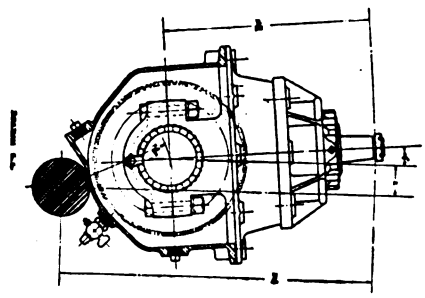
General practise of internal gear drive axle builders has been to mount the ends of the jackshaft housing in the brake flanges, though this is not followed by all, but this was characteristic of Russel axles. The Russel company originally constructed jackshafts and rear axles, and when the internal gear axle was developed concentrated on producing this in several sizes. While no statement has been made as to the general policy of the company, there is reason to believe that the new type will be standardized and that the design will be used for all Russel axles. At present, however, this will be built in the larger sizes for heavy duty trucks.

The Result of Five Years' Experience.

With reference to the design, "the merits of the internal gear axle, and the engineering principles that differentiate it from all other types of motor truck axles," states President A. W. Russel of the company, "have already been thoroughly tested in the construction and operation of the lighter trucks. Since the internal gear drive was introduced five years ago it has been under constant practical demonstration by thousands of trucks of lighter types.

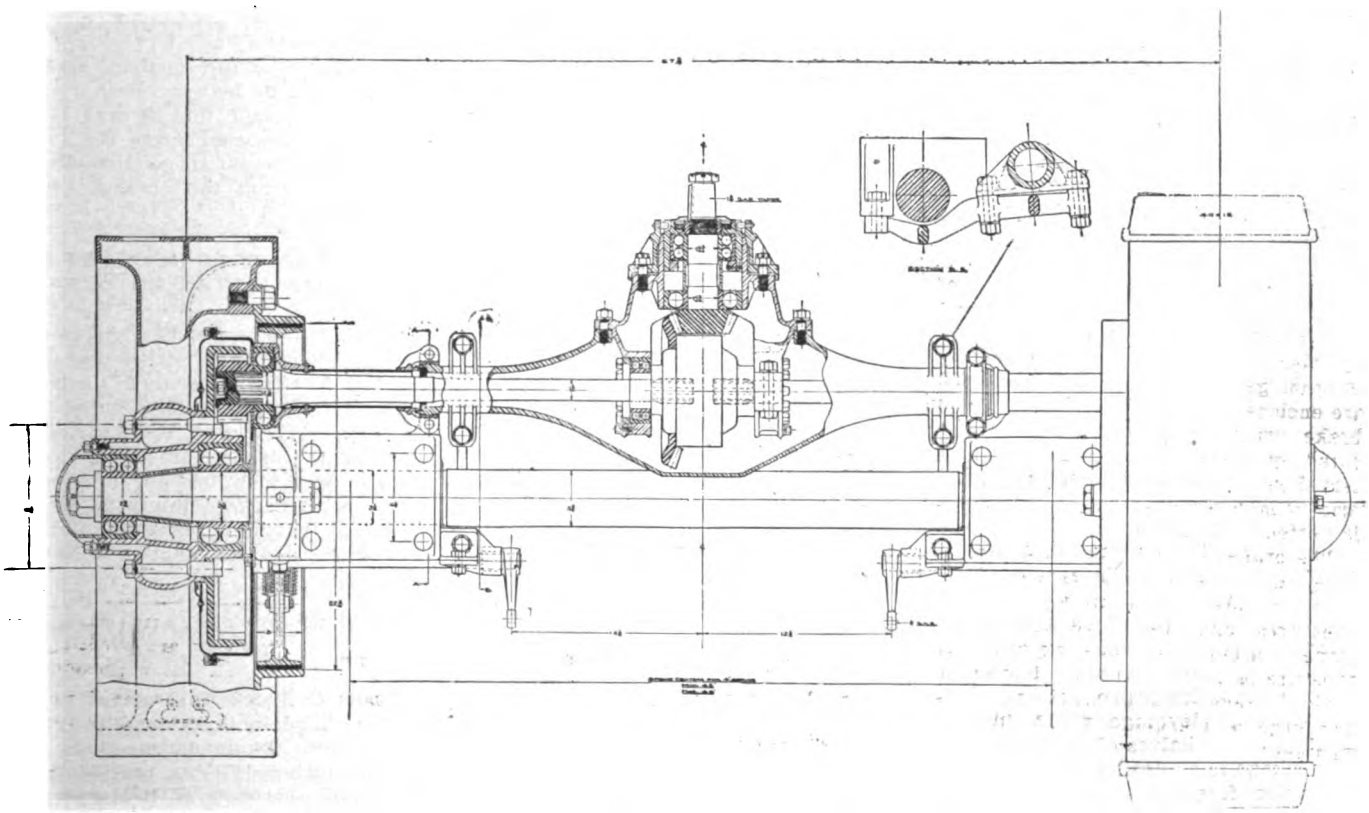
"The demand for these lighter axles, however, absorbed the production of the manufacturers and that is why the successful application of engineering principles involved seemed apparently to be limited. Having realized the needs of the heavy duty trucks of high standards in design, material and workmanship, we have been working for some time on the extension of the internal gear principles to this field and our new heavy duty axle is the result. It is the fruit of five years of experience concentrated on the production of internal gear axles and marks, we believe, a distinct advance in rear axle construction.

"The claims made for the internal gear principle of axle construction are now fairly well known, espeially among the builders and users of the lighter trucks. The relative merits of this type as compared with others have been exploited



Cross Section of the Differential Housing of the New Russel Internal Gear Axle.

technically, academically and in various practical ways. I wish to point out, however, that these relative merits of the internal gear axle apply, and are exemplified with more force, to axles for



Sectional Drawing Showing the Construction of the New Russel Internal Gear Drive Axle for Heavy Duty Trucks, with New Design Jackshaft Supports.

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heavier trucks than those designed for lighter trucks and for that reason a study of our new heavy duty axle is important. In the larger sizes of internal gear axles the advantageous factors — weight, ground clearance, pulling power and saving in gasoline consumption—are more pronounced than in the smaller capacities."

Jackshaft Supported by Axle.

The load carrying member of the axle is a single piece of round section alloy steel, heat treated, with the wheel spindles integral, and it is so designed that there are no abrupt changes in section. Claim is made that this form insures full resiliency without localization of stresses and the consequent fatigue of the metal. The spring pads and the brake spiders or flanges are mounted on the axle ends, and the jackshaft is carried on extensions of the spring seats inside of the springs, which is at variance with the practise of other internal gear drive axles. With this design the torque of the jackshaft is transmitted to the dead axle by the supports instead of through the brake flanges, and the jackshaft housing can be made much lighter and a single piece casting.

The jackshaft housing is formed to have a large central section with a circular opening at the front, which is closed with a cover or plate on which the differential gearset is mounted. The pinion shaft is carried through the center of the cover and is mounted on two annular ball bearings, one of which takes the thrust and the other carries the radial load. The differential gearset is carried by two double-row annular ball bearings. The cover is retained by a series of cap screws, and when these are removed the cover and the differential gearset assembly may be withdrawn as a unit. This cover is really two sections, there being a center plate that retains the pinion shaft and its bearings, and this can be taken out without removing the gearset.

The jackshaft driving shafts are mounted in the differential gearset at the center, and are carried on annular ball bearings at the outer ends, the housing being extended through the brake flanges. The wheel spindles are fitted with two double-row annular ball bearings of large size. The bearing equipment of the axle consists of three single row and seven double row ball bearings. Those of the pinion shaft, differential gearset and jackshaft outer ends are lubricated by a bath of oil, and those of the wheel spindles by packing with grease. The internal gears and the jackshaft pinions are enclosed by the brake flanges and the brake drums and they are also lubricated by grease. The design of the internal gear housing is such that the lubricant is retained and abrasive material is perfectly excluded.

The brakes are internal expanding and external contracting. They are of a size that provide comparatively low unit pressures, and the brake action is obtained through leverage which insures pressure on both halves of the shoe. The brake linkage is so designed that it does not require frequent and accurate adjustment.

BETTER NEW YORK-NEW JERSEY FERRIES SERVICE.

The Highways Transport Committee of the New Jersey Council of Defense is seeking better ferry service between New Jersey points and New York City as an immediate relief for motor traffic congestion. This action is the result of a suggestion to the committee by the Manufacturers' Association of Newark, as transportation is said to be seriously handicapped by ferry delays. The Jersey City Chamber of Commerce and the Motor Truck Club of New Jersey have already given their cooperation to the movement.

The plan which was outlined at a recent meeting of the Jersey Highways Transport Committee, and which was suggested by Thomas J. Wasser of Jersey City, Hudson County engineer and the engineer member of the committee, is for a census of motor traffic over the ferries, to include both motor trucks and passenger cars.

Cards with blank space on which to record the time consumed in a trip from one point to another, which takes in passage over the ferry and upon which delay at the ferry may be noted, are to be put in circulation and will be distributed to motor truck drivers and passenger car operators to fill out. The cards will have a return address, and upon their receipt by the committee the information will be compiled and presented to the railway administration officials having charge of the ferries.

MINNEAPOLIS MANUFACTURERS ELECT DIRECTORS.

The new Manufacturers' Club of Minneapolis, which is preparing to secure permanent quarters for exhibits and offices, has elected the following directors: J. S. Clapper of the Toro Motor Co., H. S. Gregg of the Park Mfg. Co., A. C. Hubbard of the Puffer-Hubbard Manufacturing Co, Edwin A. Merrill of the Minneapolis Steel and Machinery Co., H. J. Shotwell of the Shotwell-Johnson Co., H. F. Wilcox of the H. E. Wilcox Motor Co., and C. O. Wood of the Russell-Grader Manufacturing Co.

RED CROSS MOTOR CORPS CONTINUES WORK.

Members of the American Red Cross Motor Corps, representing 29 chapters of the Atlantic Division, have decided to continue the work they have been doing during the war until every casual has returned from France.

$3,000,000 FIRM WILL DEAL IN ACCEPTANCES.

The Industrial Acceptance Corporation, motor vehicles, has been chartered in Delaware with $3,000,000 capitalization by T. L. Croteau, P. B. Drew and M. M. Clancy, Wilmington.

The Colton-Johnson-Wester Motor Co., Hartford, Conn., to deal in automobiles and trucks, has been chartered with $10,000 capitalization.

Truck Owners Object to Tax Increase in Bay State

At a hearing of the Massachusetts Legislative Committee on Roads and Bridges on a bill that would increase from $3 to $20 the charge for each ton above five tons on each motor truck, representatives of automobile truck manufacturers and dealers suggested that a lower figure be fixed.

They said that while they were not opposed to contributing more money for the maintenance of the highways, they believed that the proposed increases were so excessive that they would seriously interfere with their business.

Col. William D. Sohier, chairman of the Highway Commission, in supporting the measure, said:

"Road authorities all appreciate the tremendous damage done to the roads by heavy trucks, and justice requires that if Massachusetts pursues its present policy of asking motor vehicle owners to pay the damages wrought by them on the roads, at least the fees paid should be equitably proportioned. The damage done by the trucks immeasurably exceeds that done by the pleasure cars, yet the fees are about the same, and in many cases less, as regards small trucks, and considerably lower in respect to larger trucks."

Col. Sohier expressed the opinion that even should the proposed rate be put into effect it would not compensate the state for the damage done by the very heavy trucks. He said that similar fees were in operation in New York, Connecticut and other of the larger states.

Representative Whitman of Quincy spoke in favor of a bill providing for appropriations for the repair of state highways stretching between Boston and Plymouth. He said that it was essential that the roads connecting the two centers should be put in good condition for travelers during the coming Plymouth tercentenary.

MILTENBERGER RESIGNS FROM MANHATTAN MOTORS.

E. F. Miltenberger has resigned from the presidency and active management of the Manhattan Motors Corporation, New York City, an affiliation of Gaston, Williams & Wigmore, Inc. This company handles the Selden truck. Mr. Miltenberger was identified for a number of years with Packard interests. It is understood that he is planning to ally himself with a new combination of New York capitalists.

BLOCK HEADS PHILADELPHIA AUTO TRADE MEN.

Louis C. Block was elected president of the Philadelphia Automobile Trade Association at the annual meeting. Others elected included: Vice president, Lee J. Eastman; secretary, H. B. Harper; treasurer, J. E. Gomery.

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FARMERS' COOPERATIVE HAULAGE

Maryland Association Develops Profitable Business and Affords Stockholders a Dependable Service at Expense Much Lower Than the Railroads.

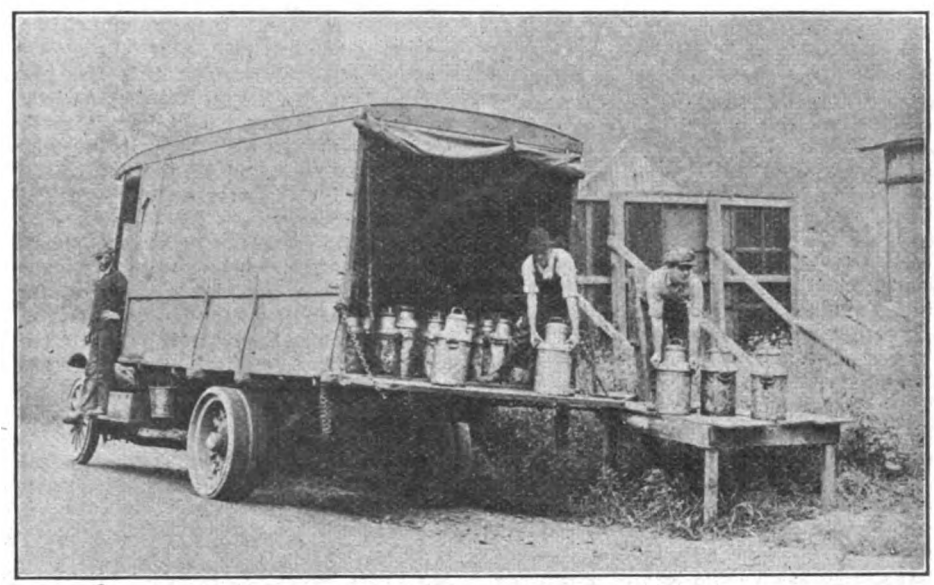
"WHAT could we do when railroad service was unsatisfactory, distance to market was excessive for horse travel, and local charges for transportation by motor truck were unreasonably high, but in self-defense organize a cooperative association and handle our own hauling," replied the secretary of the Hartford County, Maryland, rural motor truck route to the query of why the association was formed.

"We incorporated our association and capitalized it for $5000, selling 200 shares of stock which had a par value of $25 a share," continued this official. "Each member is obliged to own at least one share of stock, but is limited in his stock purchase to 20 shares. We purchased a four-ton truck, which operated between Bel Air and Churchville, Md., and Baltimore, for hauling milk, cream and other farm produce to the city, and feed stuffs, seeds, salt, fertilizer, machinery and supplies for the rural merchants on the back trip.

"A Bel Air business man kindly furnished office room and clerical assistance for the association. As soon as the project was well under way a central receiving station was established in Baltimore for the reception and centralization of the supplies to be returned to the country. No attempt has been made by the association to earn dividends. Rates are made with a view to meeting the expenses, providing for depreciation, and accumulating a surplus to be used as working capital. The rate on goods classified as first class and inclusive of apples, axle grease, baskets, butter, beans, buckets, buckwheat, barley, empty barrels, blankets, blacking, canned goods, coffee, cabbages, cantaloupes, fish, groceries, hardware, dressed hogs, harness, hay, iron, molasses, machinery under 400 pounds, notions, oils, onions, oranges, potatoes, dressed poultry, stoves, auto tires, vegetables and automobile, auto truck, buggy and wagon wheels is 15 cents a hundred weight, while second-class articles, such as axes are hauled for 12 cents a hundred pounds. Calves are transported to market for 50 cents apiece, while live cattle and hogs are handled at 50 cents a hundred weight. It costs 25 cents a coop to ship chickens, while cream and milk are hauled at 2½ cents a gallon, the empty cans being returned. Wagons (knocked down) are hauled according to size: One-horse wagons, $2; two-horse, $3; three-horse, $4, and four-horse, $5."

How Losses Are Paid For.

The association pays its members for all goods lost or destroyed. Where the shipper desires insurance against loss the charge for hauling cream is four cents a gallon, while, if the farmer is willing to assume the risk, the same charge is made for hauling cream as for milk. In case of loss all cream shipments made at the milk rate are compensated for on a milk basis. If the shipper pays the four-cent rate, all losses are settled at the market price of cream. Thus far damages have been paid out of operating revenues, although it is believed a safer policy would be to create a special reserve or claim fund to provide for such expenses. Another good plan is to take out sufficient insurance to cover both the trucks and goods in transit in case of loss.



Regular Service Truck Loading Milk Cans at a Roadside Platform, Built to Facilitate Handling, Where the Producers Deliver the Containers Convenient for Direct Transportation and Remove Them When Returned.

The members of the association who live along the route have constructed loading platforms at their front gates. They are of the same height as the floor of the truck, thus facilitating the transfer of freight from the farm platform to the motor vehicle. At present, due to the expansion of the business, and especially to the hauling for country stores, the Harford association operates one four-ton and one five-ton truck, which make daily trips to Baltimore, the distance traveled being about 60 miles.

Both Buys and Sells for Members.

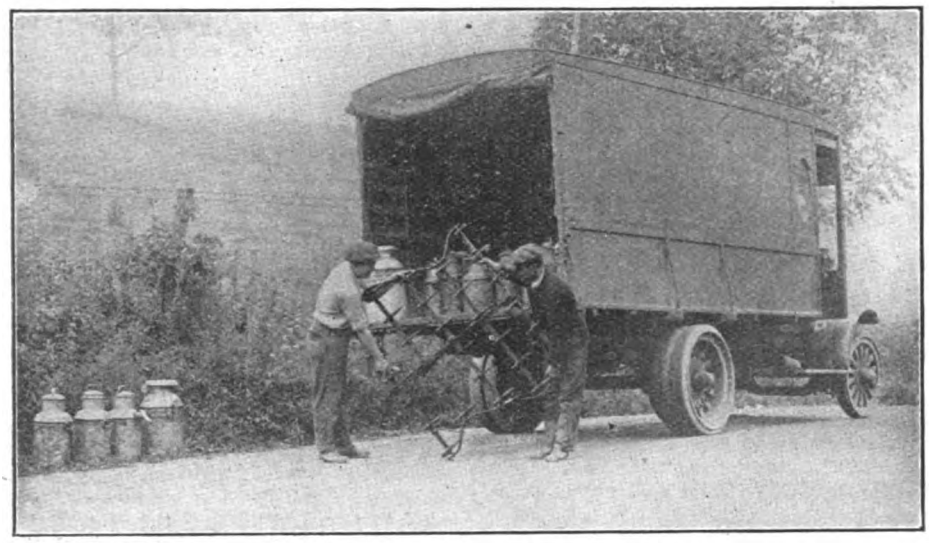
This Maryland cooperative club is of valuable assistance to its members in both the purchase and sale of produce and supplies. Members notify the secretary of their needs, and as soon as a sufficient number of orders is on hand he buys at wholesale in large amounts in Baltimore, thereby markedly reducing the cost of the articles to the farmers, as well as minimizing trouble in purchasing and hauling goods for these consumers. In case the individual farmer wishes to make his own purchase he does so, and has the supplies delivered at the receiving station, so that they may be hauled by truck to his farm. The motor service is of incalculable value to the members during periods of rush work when machines break and they are able to telephone to the city for repairs and have them delivered by the truck, perhaps the same afternoon that the accident occurred.

The association also aids its members in selling produce. One farmer had 1500 bushels of wheat which he desired to market, but as the local miller did not want to buy, and because the farmer was too busy with other work to haul the wheat to the railroad, he turned the marketing over to the secretary of the association, who sold the wheat in Baltimore and delivered it there in the club trucks. Milk and cream are hauled daily to the city and delivered at six of the metropolitan dairies, while poultry products and other farm produce are marketed with commission dealers and other wholesale firms. Because the eggs were strictly fresh, the association marketed them for its members at a premium of three to five cents a dozen over the city quotations.

Obtaining Good Operators.

Competent reliable and honest operators who will make trips in a minimum of time, and handle their cars so as to realize the maximum efficiency from their operation, are essential where the rural truck route is to be successful. The Harford plan is to have both the driver and his helper qualified to operate the machine, so that the helpers can replace the drivers when necessary. This association also keeps several emergency drivers and helpers in reserve, so that in case of sickness or accident to the regular crews the operation of the trucks

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Truck Outward Bound Delivering a Harrow at a Farmer's Gate, Ordered by Telephone a Few Hours Previously, and "Pickup" of Milk to Be Taken on for Later City Delivery.

will not cease. It provides a furnished house at Churchville for the accommodation of these employees, and also suggests the advisability of rewarding faithful operators with a cash bonus for honest and faithful services. The Harford association is completing a garage and repair shop at Churchville, which also will be used as a receiving station for country freight of the members who do not live along the regulate route.

Project Pleases Farmers.

The Harford Cooperative Association has fulfilled the purposes for which it was organized. It provides satisfactory transportation services at lower rates than the local railroad customarily charges, while the convenience of the farm to farm pick up service is very pleasing to the farmers. For the hauling of milk and cream, which constitutes a large part of the business of the Harford association, the truck system provides superior facilities to those furnished by rail, especially in that it minimizes the damages and loss of milk cans which, in the instance of railroad transportation, usually represents a heavy outlay.

According to the Maryland law the cooperative association does not need to pay the heavy license fee to which private individuals who make a business of public hauling are subject. The motor route also releases for other more profitable farm work the horses and men formerly engaged in hauling produce either to the railroad or cross country to the city market.

Field for Truck Routes.

According to the experience of the Harford County Cooperative Association the rural motor route supplies a solution of transportation and marketing problems for many farming sections which are located not more than 30 to 40 miles from a desirable city market and which are favored with permanent, hard roads. Farmers who organize such associations are advised to study carefully their local conditions, so as to be sure that there is enough year-round hauling to justify the establishment of a truck route. They should raise sufficient funds at the outset, so that they can pay cash for a truck. It is cheaper to operate a four or five-ton truck than it is to run one of two-ton capacity, provided there is sufficient tonnage available. As a rule the new club will not go wrong if it begins business with a larger truck than it really needs, as the surplus space will allow for the expansion and development of the business which is sure to follow in well selected territory.

Trucks of only standard make should be used, as under such conditions repairs will be easy to get and the overhauling of the truck will not be outside the ability of the average mechanic. In purchasing the truck special attention should be paid to the cost of operation and records of performance, as well as to the price of the machine.

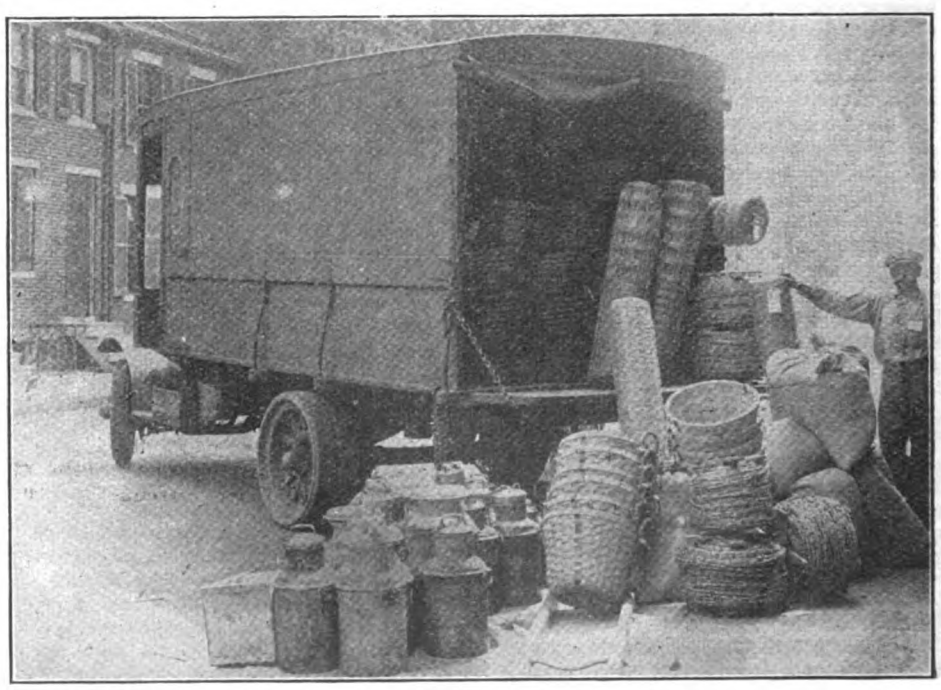
Much information in regard to the operation of this rural truck association is now available in Farmers' Bulletin No. 1032, which has been published recently by the United States Department of Agriculture.

TARVIA ROAD ENGINEERS' DATA HAND BOOK.

A very valuable technical hand book, which is of great value to road engineers, road contractors and anyone interested in the subject of good roads, has been prepared by the Technical Department of the Barrett Co. at considerable expense. Among the information covered is the quantity of tarvia per mile, distance covered by various tank capacities, material per square yard per rate of application, weights per cubic yard, tons of covering per mile, spacing of cover in one-half ton piles, square yards per 100 feet and per mile, table of highway quantities, table of stone costs, tons of stone per finished depth, length of road a load of stone will cover, square yards per 100 feet and per mile, cubic yards of macadam per 100 feet, stone in bituminous macadam roads, costs per mile at price per square yard, cubic yards of gravel per mile of road, pitch filler for lug wood blocks, conversion table, linear feet to miles; conversion table Fahrenheit to Centigrade; gauge of cylindrical tanks, specific gravity, degrees Baume, pounds per gallon, gallons per pound; bricks per mile of road, tank car diagram and tank car instructions. Tarvia specifications are given.

GILLETTE RUBBER CO. EXPANDS ITS PLANT.

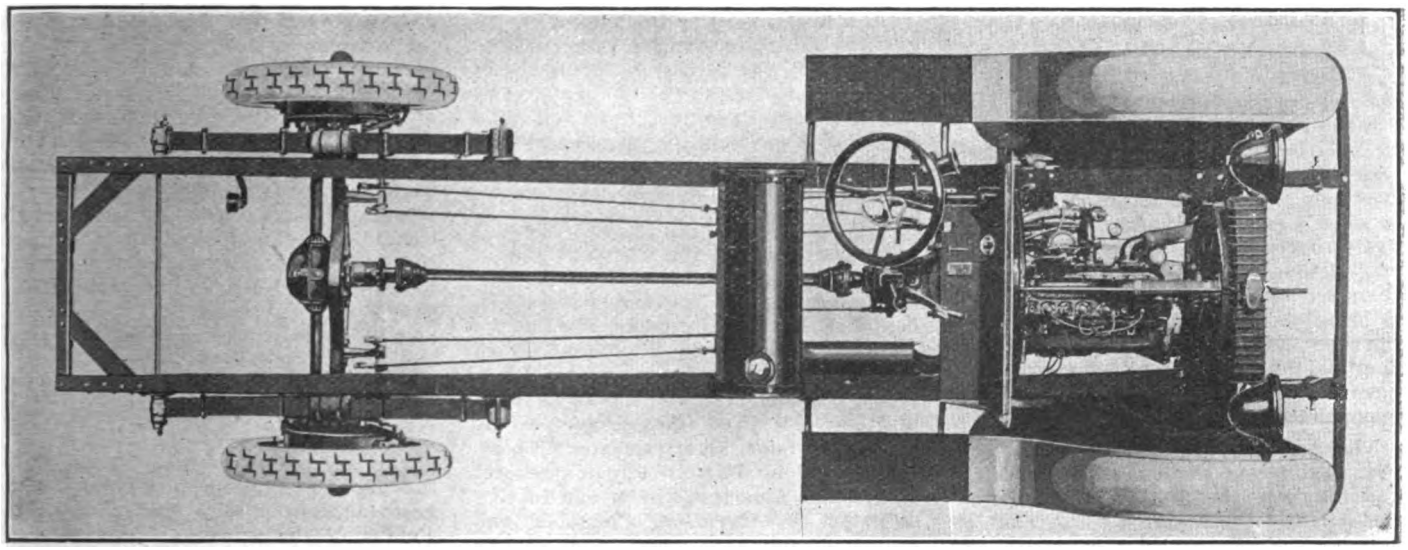
The Gillette Rubber Co., Eau Claire, Wis., is enlarging its works by the erection of a brick building, 40 by 125 feet, to accommodate inspection, shipping and warehouse departments. The company some time ago established a new department for the manufacture of solid tires.



Loading a Cooperative Service Truck at the City Receiving Station Where All Outward Shipments Are Delivered by Local Stores, Obviating Handlings and Saving Truck Time.

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COMMERCE MODELS E AND EP TRUCKS



Plan View of the Commerce Model E Truck Chassis, Showing the Unit Power Plant and Power Transmission System, and the Pneumatic Cord Tire Equipment Recommended for These Machines.

CLAIM is made by the Commerce Motor Car Co., Detroit, manufacturer of Commerce trucks, that when the chassis are equipped with pneumatic cord tires the load rating can be consistently increased. The model E chassis, rated at one ton with solid tires with a half ton overload allowance, is listed as a 1½-ton with a half ton overload allowance if equipped with pneumatic tires. The model EP chassis is rated at 1½ tons, with a half ton overload allowance. The model E is equipped with 35 by five-inch pneumatic cord tires and model EP with 36 by six-inch pneumatic cord tires.

The value of the cord pneumatic tire for light truck use is maintained by the Commerce company to be amply proven by war experience, for Commerce trucks were used in large numbers by the United States government for machine gun mounts. The chassis was not changed when pneumatic cord tire equipment was decided upon, for the company maintains that while it has no excess weight, structural strength has not been sacrificed.

The Commerce truck chassis is equipped with a Continental Red Seal engine, a four-cylinder type having 3¾ inches bore and five inches stroke, with a three-bearing crankshaft, that is rated at 22.50 horsepower by the S. A. E. formula. The radiator is designed to meet the requirements of the company, having finned cast tanks and a removable cooling section. The side columns are pressed steel. The water capacity of the system is five gallons. The company claims to have originated this type of radiator, which has now become practically a standard unit for truck construction.

The power transmission system includes a cone clutch 14 inches diameter, and a transmission gearset, a selective sliding gear type, having three forward speed ratios and reverse. The gears are 6-8 pitch, with ⅞-inch faces, and the shafts are mounted on ball bearings. There is a very accessible lubricating cup for the thrust bearings. The control and brake levers are unusually long and convenient to handle.

The main driving shaft is a nickel steel tube equipped with two Spicer universal joints, and this transmits the power to the Torbensen internal gear drive rear axle. With this construction the I section dead axle carries the load. The axle is fitted with Timken bearings. The gear reduction is seven to one. The front axle is an I section drop forging with roller bearings.

The frame is heavy channel steel section that is suspended on Detroit springs, the front set being 36 inches length and 2¼ inches wide, and the rear set 50 inches long and three inches wide. All the spring eyes are bronze bushed and the bolts are hardened and ground. The steering gear is a Jacox unit, a worm and split nut type, with an 18-inch hand wheel at the left side. The control is by the usual foot pedals for clutch and service brake and hand levers for ignition and throttle regulation, with the gear shifting and emergency brake levers at the center of the footboard. The service brake is external contracting on 15-inch drums on the rear wheels, the shoes being 2½ inches wide, and the emergency brake is internal expanding in the drums, the shoes being 14½ inches diameter with 2¼ inches face.

The truck is equipped with a Bijur lighting and ignition system and a Willard six-volt 80 ampere-hour battery. The carburetor is a Zenith and the 15-gallon gasoline tank is under the driver's seat. The equipment includes a windshield, horn, tools, bumper, electric head lamps with dimmers, tail lamp, front fender, starter, aluminum covered running boards and driver's seat. The chassis is also painted and striped. The model E chassis with solid tires lists for $1500, but with pneumatic cord tires it lists for $1625. The model EP chassis with 36 by six-inch pneumatic tires lists for $1895.

The company will furnish if ordered from the factory with the chassis three types of Highland bodies, either open express, express canopy top or a platform stake, these listing in addition to the chassis respectively $65, $130 and $135. Cabs are supplied with the chassis as extra equipment.

POLICE TRAVELING RESTAURANT.

A feature of the parade of the 27th division in New York was the appearance of the police department's new traveling restaurant, which preceded the parade by over an hour and distributed sandwiches, coffee and apples to the wounded soldiers along the street. The truck worked from 6:30 a. m. until late at night, under the direction of a lieutenant and five policemen, and distributed 18,000 sandwiches.

The appearance of this restaurant truck was due entirely to the generosity of Deputy Police Commissioner John A. Harriss, who not only donated the refreshments, but presented the truck to the police department as well. Dr. Harriss has always been keenly alive to the discomfort suffered by patrolmen under holiday conditions and during severe weather, where their regular hours are considerably lengthened and their meals few and far between.

With a view of bettering these conditions he ordered a Packard three-ton truck, upon which chassis was mounted, a complete lunch wagon, body 21 feet long and seven feet wide.

This is completely equipped as a traveling restaurant, having a coffee machine and pantries which insure warm meals under all conditions. There are 20 seats inside and in cold weather the interior may be heated by radiators connected with the exhaust manifold.

It is Dr. Harriss's plan to send this wagon around the city feeding the traffic policemen and other members of the force who would otherwise have to stand long beats without any refreshments.

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TRUCK SALES MANAGERS MEET

UPWARDS of 60 members of the National Association of Motor Truck Sales Managers were present at the two-day conference at the Bellevue-Stratford at Philadelphia, April 11 and 12, this being the largest and most interesting gathering of the organization ever held. This association is composed of sales managers of many concerns actively operating in the industry, and while it does not undertake to formulate company policies, the members endeavor to bring about uniformity of sales conditions so far as this may be practically done to the end that all concerns may have the benefit of equality of business opportunities.

The association meets four times a year in different sections of the country, and this was the first meeting held in the Atlantic coast states. The plan of activities of the association has been broadened so that now it admits to membership some officers and executives of the companies represented.

The meeting included morning and afternoon sessions the first day, a banquet in the evening and a final session the following morning.

Following the roll call of members at the opening session there was an address of welcome by L. J. Eastman, president of the Packard Motor Car Co. of Philadelphia, who welcomed the members in behalf of the Philadelphia Motor Truck Dealers' Association and the Philadelphia Chamber of Commerce; a response and introductory address on "The National Association: Its Aims and Objects," by John E. Tracy, president of the National Association of Truck Sales Managers; enrollment of new members; report of membership committee; report of standing committee; new business; address, "What Are the Truck Manufacturers Doing in Their Sales Departments to Justify the Contemplated Increased Production," E. S. Foljambe, directing editor, Commercial Car Journal; address, "How Can We Improve the Present Standard of Service and Parts Policies and Standard Warranty?" E. T. Herbig, sales manager Service Motor Truck Co., Wabash, Ind.; address, "The Dealer and Truck Advertising," Sidney J. Stern, advertising manager, Automobile Trade Directory, New York City.

The programme for the afternoon session consisted of an address, "For the Good of the Industry," C. C. Barley, president Indiana Truck Corporation, Marion, Ind.; address, "New Slants in Advertising as Applied to Motor Truck Selling," Henry M. Hobart, general sales manager, International Magazine Co.; address, "What Can the Factory Do to Make the Local Truck Dealer a Success?" W. H. Baker, general manager, Baker Motor Sales Co., Inc., Boston, Mass.; address, "What Is the Dealer's Attitude Towards the District Manager and Does Supervision of the Dealer Through That Source Answer the Purpose for Which It Is Intended?" J. C. Ayers, vice president Denby Motor Truck Co., Detroit; symposium: "Is the Passenger Car Distributor of Today the Ultimate Truck Dealer of the Future," (a) "An Exclusive Motor Truck Dealer." Gale Smith; (b) "A Dealer Who Handles Both Passenger Cars and Who Has Not Been 'Sold' on the Truck," W. H. Metcalf. These addresses were followed in each instance by open discussion.

The banquet in the evening was of great interest, there being about 550 persons present. The speakers were President J. E. Tracy, Milwaukee, Wis., of the National Association of Motor Truck Sales Managers; Congressman R. O. Moon, Philadelphia (who served as toastmaster); Col. Fred Glover, chief of the Motors Division, Quartermaster's Corps, U. S. A.; John Barrett, director general of the Pan American Union and foreign minister to Argentine, Colombia and Panama, who spoke on "Central and South America: the Great Opportunity;" Edward James Cattell, city statistician, Philadelphia; John S. Craven, chairman Highways Transport Committee of the Council of National Defense, Washington, D. C.; H. Walton Heegstra, Chicago, Ill., and C. A. Musselman, regional chairman, Highways Transport Committee, Philadelphia.

The final session was devoted to a series of addresses, which included "What Is the Future of the Farm Tractor in the Motor Truck Industry?" F. E. Seiberling of the Goodyear Tire and Rubber Co., and H. E. Everett, Philadelphia; "Territory Research and Truck Distribution," Harry Tipper, New York City; "Sales as Affected by Extended Use of Trucks in Postoffice Work," C. A. Wales, Locomobile Co. of America, Bridgeport, Conn.; "Hiring and Training Salesmen" H. Walton Heegstra, Chicago; "The Influence of Sales Organizations on Highway Development," E. J. Mehrns, editor, Engineering-News Record; New York City; "Simplicity and Advantage of Keeping Truck Costs—Knowledge of Cost to Operate Means Satisfied Owners and Increased Sales," A. S. Duckworth, David Lupton Sons Co., Philadelphia; "The Economic and Financial Phases of Highway Transport," Charles W. Reid, Council of National Defense, Washington, D. C.

The members of the association were handsomely entertained by a local committee consisting of C. A. Musselman of the Chilton Co., chairman; E. H. Fitch, W. B. McCullough and W. G. Herbert, representing the Philadelphia Auto Trade Association; Lee J. Eastman, J. C. Schwartz and W. H. Metcalf, the Motor Truck Association of Philadelphia, and W. Ross Walton, G. B. Shearer and N. A. Petry of the Automobile Accessories Business Association. One of the incidental events was a luncheon tendered by the first two named organizations the first day at the headquarters of the Auto Trade Association.

One fact of interest to all members was the reiteration by Col. Glover of the policy of the War Department's policy of disposing of the trucks and cars owned by the government, first by distribution to governmental departments and then offering them to the manufacturers. Predictions were made that the total sales of trucks for the year would reach a total value of $1,000,000,000 and that production would approximate about 320,000. Statement was made by Windsor T. White of the truck committee of the National Automobile Chamber of Commerce that more than 175,000 trucks were built for commercial distribution and 54,410 to government contracts in 1918. In 1917 about 160,000 trucks were built.

BIG INCREASE IN SALES OF MACK TRUCKS.

The International Motor Co. announces that its sales for March showed the biggest increase of any month since the signing of the armistice. An outstanding feature of this big increase of business is that fully 50 per cent. of the orders are for Mack heavy duty trucks, ranging from 3½ tons to 7½ tons capacity. This is interpreted as a growing realization of the greater economy of large units.

The marked increase of new customers is attributed in part to the fact that returning soldiers who have seen Mack trucks in the service of the United States Engineers in France are telling of their wonderful work in the war. Mack units were much sought after by soldiers who had to drive trucks because it was practically impossible to stall them, and they gave the least trouble in operation. This appealed to tired and worn soldiers, who are making their preference known.

MILITOR TRUCK ENGINEER BACK AT POST.

Ray A. Long is back at his old post as chief engineer for the Columbia Motors Co., manufacturer of the Columbia Six. Soon after the United States entered war Mr. Long entered government service, and was appointed one of the staff of engineers to develop the Militor four-wheel drive truck. The government approved the Militor design for enormous production, as the truck was able to go almost anywhere that a tank could go. At the time of the signing of the armistice many concerns were under contract to build these trucks.

WILL HANDLE HALL CHASSIS FOR CUBA.

The Automotive Products Corporation, New York, export manager for the Lewis-Hall Iron Works, Detroit, manufacturer of Hall trucks, has appointed Manuel Velasco as distributor in Cuba for Hall chassis. Mr. Velasco was general manager of the Matanzas Importing Co. in 1916-17, and later he entered business for himself as a manufacturers' agent. He recently visited the Hall plant and ordered a large number of chassis for immediate shipment.

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KORSHIN JOINS SELDEN ORGANIZATION.

Matt R. Korshin, who for a considerable period was, located in the East as district sales manager for the Atterbury



Matt R. Korshin, Western Sales Manager, Selden Truck Sales Co.

Motor Car Co., Buffalo, N. Y., on April 15 became associated with the Selden Truck Sales Co., Rochester, N. Y., as western sales manager, with headquarters at Chicago, Ill.

Mr. Korshin succeeded A. R. Kroh in the Selden organization, who in turn will be associated with the Goodyear Tire and Rubber Co., Akron, O.

As western sales manager in the Selden organization Mr. Korshin will be in charge of the dealers' organization in Illinois, Indiana, Wisconsin, Minnesota, North and South Dakota, with divisional headquarters at 2334-36 Michigan avenue, Chicago, Ill.

ELECTRIC FURNACE MAKERS FORM NEW BODY.

Important steps to promote the use of various electric furnace products were taken at a meeting at Niagara Falls, called by Acheson Smith, vice president and general manager of the Acheson Graphite Co., Niagara Falls. Resolutions were passed inviting all manufacturers of electric furnaces, electrical apparatus, electric furnace supplies and accessories, public utility corporations, designers and inventors of electric furnace equipment and the users of electric furnaces to become members and to join in making an aggressive and thorough campaign to disseminate to engineers and to the public accurate data as to the quality of electric furnace products of all kinds. A permanent organization was created, with Mr. Smith as president and C. G. Schleuderberg, Westinghouse Electric Manufacturing Co., Pittsburgh, as secretary. It is likely that the next meeting will be held in New York in April, at the same time as the spring meeting of the American Electro Chemical Society. C. H. Booth is chairman of the publicity committee.

PLAN FOR DEMONSTRATIONS OF TRACTORS.

A tractor demonstration under the auspices of the Pacific Northwest Tractor and Power Farming Association will be held at Walla Walla, Wash., April 23, 24 and 25.

A tractor demonstration will be held at Sacramento, Cal., under the direction of the California Tractor and Implement Association, May 6-12.

E. B. ROSS ELECTED MAYOR OF BUCHANAN.

E. B. Ross, vice president of the Clark Equipment Co., Buchanan, Mich., manufacturer of internal gear axles and disc steel wheels for motor trucks, has just been elected mayor of Buchanan on a fusion ticket.

"Ted" Ross, who is one of the best known automobile men in the country, is a graduate of the University of Maine, school of engineering, class of 1902, and is a member of Beta Theta Pi and several learned societies.



E. B. Ross, Vice President Clark Equipment Co., New Mayor of Buchanan, Mich.

He was with the Baldwin Locomotive Works, Philadelphia, following his graduation and 10 years ago joined the Clark Equipment Co.

He has had much to do with popularizing the internal gear axle and disc steel wheel which were invented and developed in the Buchanan plant by his associates.

To be thus honored by his home city is an eloquent testimonial to the esteem in which he is held by his friends and neighbors.

AMERICAN-LAFRANCE PROFITS.

The American-LaFrance Fire Engine Co. reports for the year ended Dec. 31, 1918, net earnings after taxes of $309,348, compared with $435,355 in 1917 and $353,570 in 1916. This is equal to 11.7 per cent. on the common stock, against 20 per cent. in 1917 and 14 per cent. in 1916.

ACASON TRUCK MAN MEETS SUCCESS IN MEXICO.

Jose Merla, manager of the foreign department of the Acason Motor Truck Co., Detroit, recently returned from an extended trip to Mexico. On his return to New York he was host at a dinner given at the Hotel Pennsylvania, his guests being Rafael Nieto, minister of finance in Mexico; J. L. H. Allen, vice president, and G. A. Wilson of the National City Bank of New York; Dr. Alfred Caturegli, financial agent of the Mexican government; J. N. Zermeno, representing the Mexican Fiber Producers' Association, and B. A. Quiroe of the Empire Mexican Oil Co. Mexican affairs were discussed at length and optimism was expressed on all sides.

In the face of strong competition Mr. Merla was successful in establishing Acason trucks as the standard make that will be used exclusively by the Express Constitucionalista de Mexico. Other makes now in the service of the organization will be withdrawn when a big shipment of Acason machines arrive from the Detroit factory.

MULL HEADS NEW COMPANY.

The Tucker Wood Work Co. of Sidney, O., manufacturer of bicycle wood rims, auto steering wheels, etc., has been purchased by the Mull Wood Work Co.

E. B. Mull, president of the Mull Wood Work Co., is well known in the automobile trade, as he has been identified directly with production in the automobile industry for nearly 20 years.

In addition to Mr. Mull, who was for several years assistant director of service for the Willys-Overland Co., Inc., the company includes several well known men in the automobile industry. The new owners will manufacture steering wheels, bicycle rims and other bent wood specialties.



E. B. Mull, President of the Mull Wood Work Co., Sidney, O.

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1700 TRUCKS IN PACKARD EFFICIENCY TEST.

The Packard Motor Car Co. has already received the entries of 1700 trucks competing in the second truck efficiency test inaugurated by that concern. With the owner interested in the money he can save, and the driver, shipping clerk and accountant in winning some of the $17,640 in awards, from 5000 to 6000 persons will closely follow the results achieved. The test, lasting a year, will end Jan. 31, 1920.

The average saved by each leading truck in the efficiency test of 1918 was $696 a year, the company announces. On this basis the 1700 trucks in the present test should save for their owners $1,183,200.

At the factory the monthly report of each truck is gone over by a truck transportation expert. He finds all the strong points and the weak ones, too. A complete analysis is then put down in writing and a copy sent back to the owner along with suggestions telling him just what to do to get more work out of his truck or trucks with greater profit.

GODDARD DIRECTOR OF MILITOR CORPORATION SALES.

H. A. Goddard has assumed the duties of director of sales and advertising of the Militor Corporation, with general offices at 115 Broadway, New York City.

For several years Mr. Goddard was connected with the Standard Parts Co. of Cleveland as export manager and eastern representative, located in New York, and later in charge of sales for the State of Michigan, with headquarters in Detroit.

Prior to this time he was general sales manager for the Gramm Motor Truck Co. of Lima, O. Mr. Goddard was also for a number of years in the advertising business, devoting much of his time to the development of automobile advertising.

T. W. D. TRACTOR CO. HAS $100,000 CAPITAL.

The General Motors Corporation, Wilmington, Del., has increased its capitalization from $102,600,000 to $370,000,000.

The T. W. D. Tractor Co. has been formed in St. Clair with $100,000 capitalization.

The Michigan Crank Shaft Co., Muskegon, has increased its capital from $50,000 to $200,000.

MARVEL DISTRICT SALES MANAGER.

W. E. Marvel, for a considerable time connected with the Service Motor Truck Co., Wabash, Ind., has been appointed sales manager for the district consisting of the states of Utah, Colorado, Wyoming and parts of New Mexico and Idaho.

M. T. Langlais, who was connected with the L. Peacock Auto Co., distributor of Service trucks in San Francisco and Oakland, Cal., died recently at his home at San Francisco.

WORK BEGUN ON FORD PLANT AT HAMILTON, O.

Work has been begun on the tractor plant to be built for Henry Ford & Son at Hamilton, O. It will be operated by water power secured by damning the Miami river at that point. The capacity of the new plant will be 500 daily.

The small plant being constructed at Nankin, Mich., a short distance from Detroit, will soon be in operation. Some of the parts departments at the present Fordson plant at Dearborn will be moved there.

Plans are now being made for a small factory at Plymouth.

Henry Ford, replying to an invitation to Ford & Son from the Chamber of Commerce at Washington, D. C., stated that "due consideration" would be given to Washington as a possible location for a plant.

ENOS IN ORGANIZATION OF FIRESTONE STEEL.

Lawrence W. Enos, until March a first lieutenant in the Quartermaster Corps, has entered the organization of the Firestone Steel Products Co. of Akron as manufacturers' representative in the Detroit district. During the 20 months he was in the army he had charge of production and truck inspection in various cities throughout the middle west. His last assignment was in Cleveland, where his work involved the output of 60 plants. Previous to his enlistment he was with the Steel Products Co. of Cleveland.

CHANGES MADE IN HART-PARR CO. STAFF.

Changes have been made in the organization of the Hart-Parr Co., Charles City, Ia. I. C. Willhite, W. A. Ingalls, W. L. Cramer and A. A. Teal have been added to the sales staff H. H. Boetzer is branch manager at Great Falls, Mon. H. A. Reed directs the road engine department. B. F. Sullivan is organizer of territories. John Bossart is assistant manager at Wichita, Kan. A. W. Sawyer has become advertising manager and W. E. Dodge is in charge of publicity.

ELECTRIC STEEL CO. HAS NEW OWNERS.

The Electric Steel Co. of Indiana has been bought by J. Rogers Holcomb and Roger B. Farquhar, Jr., who will enlarge the present facilities for the manufacture of small electric steel castings for tractors, motor trucks, ordnance and allied lines. Mr. Holcomb is president and Mr. Farquhar is vice president. They were formerly associated with the Midvale Steel Co.

IDAHO FARM DEVELOPMENT.

The Idaho Farm Development Co., with $1,000,000 capitalization, has been chartered in Delaware by Edwin Snow, Alice Snow, Boise, Ida., and Thomas L. Malkins, Salt Lake City, Utah.

HIGHWAYS GROUP TO MEET.

The highways group of the Chamber of Commerce of the United States will meet at St. Louis, Mo., April 30, at the banquet hall of the Missouri Athletic Club, at which time a report will be presented by F. A. Seiberling, chairman of the highways committee of the chamber, and addresses will be made by well known speakers, to be followed by discussion. The expression of the meeting will be presented to the resolution committee of the chamber, which will in turn make report to the seventh annual meeting May 1, at which 1300 commercial organizations, representing 650,000 corporations, firms and individuals, will have voice.

SATISFIED SANFORD OWNERS.

The Sanford Motor Truck Co., Syracuse, N. Y., has published a very interesting booklet of letters received from owners of Sanford trucks which briefly state experiences with the machines in greatly diversified service and covering varying periods of time, as well as statements from dealers relating to the satisfaction of truck owners generally. The booklet deserves the attention of both dealers and prospective truck buyers. Copies may be obtained by addressing the company.

NAUTS TAKES HALL TRUCK AGENCY FOR OHIO.

Announcement is made by the Lewis-Hall Iron Works, Detroit, manufacturer of Hall trucks, of the closing of the Ohio territory to Charles N. Nauts, Columbus. Mr. Nauts is well known throughout the states and should prove a big business getter for the Lewis-Hall concern. A sales and service station will be established both in Columbus and Toledo. Mr. Nauts, upon his recent visit to the Lewis-Hall plant, left specifications covering a quantity of chassis for immediate delivery.

ALLIS-CHALMERS DECLARES DIVIDEND.

The Allis-Chalmers Manufacturing Co. has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock and in addition ¾ per cent. on account of back dividends. This payment leaves 3¼ per cent. in arrears on the preferred stock. The dividend is payable April 15 to stock of record of March 31. Charles Hayden of New York and Dr. C. E. Albright of Milwaukee were elected to the board of directors.

BRISCOE NEW ONE-TON TRUCK COMING.

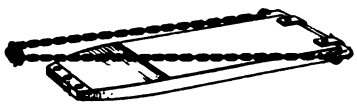
The Briscoe Motor Corporation, Jackson, Mich., will probably introduce its one-ton truck soon. Dealers have been receiving veiled hints regarding this new model for several months. A Briscoe official says that when the truck is offered to buyers the experimental machines will have gone through tests such as no new trucks ever went through before.

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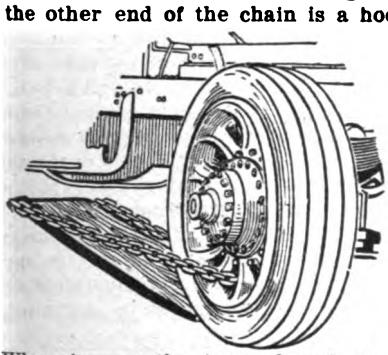
NEW ACCESSORIES AND SUPPLIES

MOORE'S MUD HOLE SKID.

Langley & Schultze, Louisville, Ky., manufacture a device for trucks, a patented article, known as Moore's Mud Hole Skid. As the name implies it is intended for use with any power vehicle, utilizing the driving effort of its engine to extricate it wherever traction is not normally obtainable. Statement is made that it is an exceptional utility with any truck, because it can be carried and can always be available, and that it will economize time, labor, fuel, tires and perhaps repairs. The accompanying illustration shows the device and manner of using it. With a pair of Moore skids any emergency can be met.



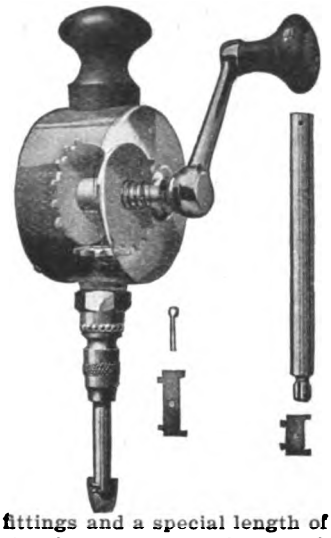
The skid is a section of plank with one end tapered so it may be forced into sand or mud, and is strengthened by a band of heavy metal. At the other end of the plank, retained by two stout clamps, is an iron bar, the ends of which are turned at right angles to the main section and carry rings. One end of a chain more than twice the length of the skid is secured to one of these rings and at the other end of the chain is a hook.



When in use the tapered end of the skid is forced under the tire of the driving wheel that has no traction. The chain is carried between the spokes back of the axle center so there will be draft upon it as the wheel is turned. The other end of the chain is hooked to the ring at the broad end of the skid, and the slack is taken up. When the engine is started the turning of the wheel will roll the wheel upon the skid. After the wheel is well on the skid and traction is positive the chain is cast off. Prices quoted on application.

SIOUX VALVE GRINDER.

Albertson & Co., Sioux City, Ia., manufacture a tool that should be in the hands of every truck owner who occasionally grinds the valves of his truck. The tool is hand driven and consists of a handle or crank operated wheel which drives through suitable gears the grinding tool. The gears are so arranged that by a continuous turn of the crank the tool is given a reciprocating motion, always traveling slightly forward in one direction, then in the opposite, until the whole circumference has been made. With the tool are furnished three special valve



head fittings and a special length of shaft for extension purposes. Prompt deliveries are assured. Price, $6.

FIRE GUN EXTINGUISHER.

The Fire Gun Manufacturing Co., Inc., New York City, produces a fire extinguisher that can be very serviceable for truck owners. It is a liquid pump that is double acting from the first stroke until it is empty, showing great efficiency



as compared with extinguishers that are only double acting when nearly full. It is an extinguisher that is effective for gasoline, oil or electric fires. It holds 25 per cent. more fluid than most extinguishers.

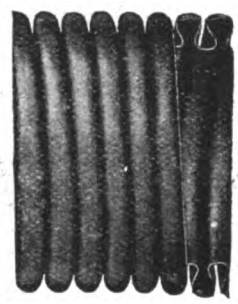
The Fire Gun fluid is effective where water is useless. The maker claims it will not deteriorate, is a non-conductor of electicity, does not freeze at 50 degrees below zero and will not damage machinery or delicate fabrics. Prices: No. 1, capacity 1¼ quarts, $12; No. 2, capacity, 1¾ quarts, $16.

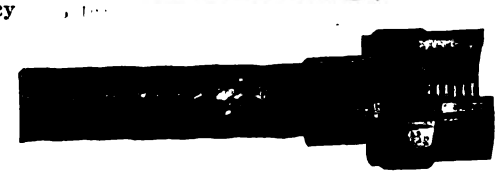
TITE FLEX METAL HOSE.

The Tite Flex Metal Hose Corporation, Newark, N. J., manufactures flexible hose for unloading tank trucks, filling barrels, garage tanks, for use in storage and supply stations, for gasoline and oil feed lines for gasoline engines, conduits for battery, ignition, lamp and electric horn wiring, etc.

All commercial flexible tubing is rolled from strip metal and turned over in passing through the dies so as to make an interlocking joint. The flexibility in ordinary full or semi-interlocking tubing is obtained from the sliding action of the joint parts one on the other within the joint, the coil remaining rigid.

All flexing in Tite Flex, as distinguished from that in "interlocked" tubing, takes place within annular diaphragms which are at right angles to the axis of the tube and formed by the sides of the U shaped convolutions that are





characteristics of the Tite Flex section.

The interlocking portions comprising the seam are compressed under heavy pressure to make a continuous perfect and permanently tight cold welded structure. The seam is to all intents and purposes virtually solid metal. The flexibility is, therefore, entirely in the metal and the seam is primarily self-tight, not "semi-tight" or "near-tight" or depending in any way upon additional provision for tightness.

UNIVERSAL HOSE CLAMPS.

The Universal Industrial Corporation, Hackensack, N. J., manufactures hose clamps for any size hose, especially



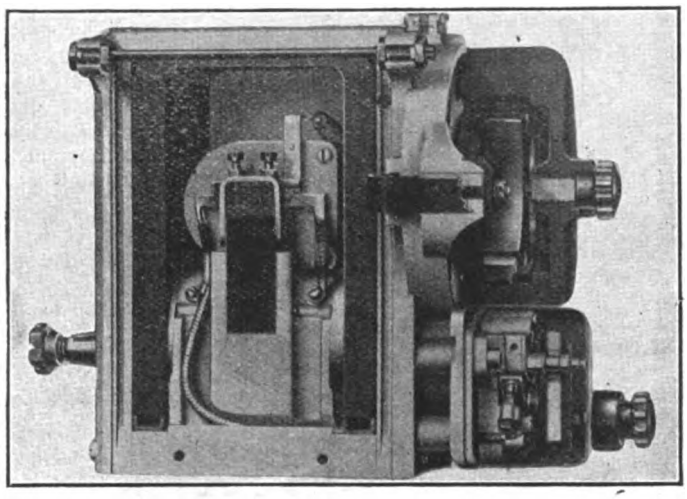
truck engine sizes. These clamps have a wide range of usefulness. They fit in size and adjustment any hose requirement, large or small. They are simple, strong and convenient. Prices on application.

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SPLITDORF AERO TYPE MAGNETO.

BORN out of the experience gained during the world war the Splitdorf Electrical Co., Newark, N. J., has recently develop a new series of magnetos, known as the Aero type series. A view of one of these magnetos, partly in section, is shown in the illustration.

The general design of the magneto is toward sturdiness, the interrupter points being made extra heavy. A single square carbon brush is used on the instrument. The gears used are made from Mircata and the distributor board is a product called "Americanite."



Sectional View of the New Splitdorf Aero Type Magneto Having Unidirectional Current Flow.

Americanite is a new insulating material which this company has discovered and manufactures in its own plant for use in electrical instruments.

It is moulded similar to other products of this nature and in the case of the distributor block the contacts are moulded integral with the Americanite. Mircata, which is used for the gears, is a pressed material and not only runs quiet, but is claimed to give long service.

The Mason principle of stationary windings and revolving poles is employed, as in all Dixie instruments. The new instrument is unidirectional. Since a magneto is an alternating current generator, it produces its current in the form of positive and negative waves. It has been found in experimenting with instruments of this kind that one wave series is always stronger than the other and in the Aero type magneto it is the negative wave series which is the stronger. This instrument is, therefore, designed so that the negative waves are utilized as the spark producing waves. These flow always in the one direction through the instrument and spark plugs, hence the designation unidirectional waves as the spark producing ones.

The breaker operating cam has two lobes and the revolving field or rotor has four wings. When the rotor wings on the distributor end of the magneto leave the poles the cam separates the platinum points and a spark is produced. When the rotor wings on the drive end of the magneto leave the poles the cam holds the platinum points open; no spark is produced at this function, but the stray magnetic lines and eddy currents in the field poles and coil are scavanged, leaving the core and poles free from magnetic interference for the next spark producing reversal. This sequence of operations is for a magneto operating in a right hand direction. In the left hand type the cam opens the platinum points when the rotor wings on the drive end leave the poles. In this case the position of the magneto is reversed, this being done so as to maintain a spark of the same polarity in both cases.

Polarity Is Now Changed.

The principle employed in Aero magnetos is that of using a so-called rotor (which is supported by the magnet), constituting extensions of the magnet poles. This rotor has two wings insulated from each other and each in constant contact with one of the poles, so that the polarity of the revolving members never changes. These wings revolve with the shaft, and as they do so they brush the field pieces which are in contact with the core of the winding which is housed in the arch of the magnet. Thus the revolving pole extensions cut the lines of force and produce a low-tension current in the primary. The production of the secondary is the same as that of the usual design of magneto. The claims made for this instrument is that there is no change of polarity of the revolving members, the spark strength is the same regardless of the timing lever position, simplicity of construction, provision for protection of the windings and condenser in the arch of the magnet, its quick break and great ease of adjustment even when the instrument is in operation.

PNEUMATIC AND SOLID TIRES FOR TRUCKS.

"What type of tire shall I put on my motor truck? is a question I am often asked these days," says H. G. Palmer, manager of the pneumatic tire department of the Goodyear Tire and Rubber Co. "The many advantages of pneumatics in certain fields of service are causing truck buyers to investigate their merits before accepting the conventional type of solid tire that for some years has been standard equipment on many trucks.

"A great deal depends, of course, on the class of service the truck is in. There is a distinctive field for both solid and pneumatic tires according to the service they are expected to render. In some kinds of service pneumatic tires are best —in others solid tires are undoubtedly more economical. Generally speaking, however, pneumatic tires perform best where conditions require speed and cushioning of the load, while solid tires are confined to slow speed, heavy duty trucks.

"A pneumatic tire is designed to increase cushion and lessen power consumption. It depends on air for its cushioning effect. A solid tire depends for resiliency on a mass of vulcanized rubber, and a point often overlooked is that vulcanized rubber is practically incompressible. Its cushioning effect is only possible by distortion and recovery.

"Take an inch cube of vulcanized rubber. Stand on it. As it decreases in height it expands in all directions. The edges of the rubber creep outwards and cause friction. With the pressure removed the rubber resumes its normal form. This is exactly what takes place in the particles of a solid tire as it revolves along the road surface. And when the speed of the truck becomes too great for the rubber in the tires to expand and recover, the cushioning quality is gone and there is no protection of the mechanism of the truck from shock. This is why trucks on solid tires cannot be safely run at high speeds.

"Air is a much better cushion than rubber and as its pneumatic container comes in contact with the ground the tire surface flattens and accommodates itself, but does not expand as the solid tire does. So that greater speed is possible on pneumatics.

"It is fortunate that just at this time when such a wonderful opportunity is opening up for the motor truck, pneumatic tire equipment for truck service should have been developed, permitting the motor truck to advance far into the new, broad field of usefulness. Pneumatics make practical certain phases of operation that formerly were out of the question, for they have permitted the motor truck to graduate from the slow moving field to which it was confined by its solid tire equipment."

TRUCK TALK FOR DEALERS AND OTHERS.

Truck Talk, the official publication of the General Motors Truck Co., has numerous articles of special interest to dealers, truck owners and prospective owners. Announcement is made that Truck Talk will be mailed to all dealers, owners, users and possible owners who apply for it. Application should be sent to the Editor, Truck Talk, General Motors Truck Co., Pontiac, Mich.

The Whitestown Motor Co., Inc., Yorkville, N. Y., has asked permission to increase its capital from $6000 to $12,000.

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GMC PLANS $37,000,000 EXPANSION

OPTIMISM in the future of the tractor and other automotive industries has been elevated to a high level by the announcement by the General Motors Corporation that it has authorized for plant extensions and for new construction projects, to be completed during the present fiscal year, expenditures of $37,398,000.

To take care of the immense growth in sales of agricultural machinery and of tractors, twin acquisitions of General Motors for the past two years, new plants for the Janesville Machine Co. and for the Samson Tractor Co. will be built at Janesville, Wis.

The distribution of the vast expenditures will be as follows: Detroit, $12,650,000; Flint, Mich., $6,715,000; Pontiac, Mich., $2,150,000; Lansing, Mich., $2,450,000; Saginaw, Mich., $2,427,000; Toledo, O., $543,000; St. Louis, Mo., $4,135,000; Bristol, Conn., $1,028,000; Janesville,, Wis., $4,500,000; Muncie, Ind., $800,000.

This is the General Motors Corporation's decisive answer to nervous folk in the world of industry and finance who have "been waiting developments" of post-war conditions before mapping out their industrial and financial plans for the ensuing year.

"Everybody has been waiting to see what the other fellow was going to do," said W. C. Durant, president and general manager of the General Motors Corporation, as he made the announcement.

"This is what General Motors is going to do.

"The investment of these large amounts again emphasizes and confirms its judgment in the underlying stability of the country, and in the soundness of the automobile industry."

In the $12,650,000 allotment to Detroit is included an item of more than $5,000,000 for a 15-story general office building with a research laboratory, four stories in the rear. Mr. Durant authorized announcement that the General Motors Corporation would also expend approximately $6,000,000 in Walkerville, Ont.

Detroit's $12,650,000 share comprises a new plant for the Cadillac Motor Car Co. division, sales and service building for the Cadillac; a differential gear and transmission plant, general heating and power plant; extension to the Central Forge Co. and the Northway Motor and Manufacturing plant, and the office building and research laboratory.

The office building will contain an auditorium seating approximately 1000.

Walter P. Chrysler, president and general manager of the Buick Motor Car Co., has been appointed vice president in charge of all General Motors operations and assistant to the president.

The strong central operating organization, headed by Mr. Chrysler, will direct in a central way the carrying out of the policies of the corporation.

Mr. Chrysler will continue as president of the Buick company. He will be succeeded as general manager of the Buick company by Harry H. Bassett, assistant general manager of the plant for several years.

Big extensions to the Buick and Chevrolet plants and the erection of 1000 model homes are planned for Flint. The rapidly growing Oakland plant at Pontiac will be enlarged and new homes erected there. In addition to the erection of a new axle plant at Lansing an extension will be made to the Olds Motor Works. At Saginaw there will be important foundry extensions and a new heating and power plant.

In St. Louis there is an interesting development. The Buick company, heretofore confined to Flint, is to have a new assembling plant in accordance with plans which call for an output in 1920 or 1921 of 300,000 cars. Chevrolet is to have another assembling plant and a big new wood working plant for the General Motors organization is to be erected in St. Louis, the natural center on account of its accessibility to the lumber district.

Under Mr. Chrysler's management the Buick output has been expanded from 36,000 cars in 1913 to 140,000 cars per annum. It is understood that the new arrangements involve no material change in the policy of the independent management of the General Motors extraordinary development. A strong central operating organization, headed by W. P. Chrysler, will simply direct in a general way the carrying out of broad policies.

NORTHWESTERN MICHIGAN HAS TRANSPORT BODY.

A preliminary organization of the Northwestern District Highways Transport Commission, by a selection of a county chairman for each of the 24 counties comprising the northwestern district of Michigan, was effected at a meeting held in the office of the secretary of the Grand Rapids, Mich., association. F. K. George was unanimously chosen secretary. County chairmen will be asked to report if there are now in operation any motor express or freight lines in their respective counties and if any such routes are in contemplation. This resolution was adopted:

"Whereas it has been deemed expedient to form committees throughout the State of Michigan, for the encouragement and extension of the movement of freight and express by motor via the highways; and

"Whereas the success of such method of transportation depends primarily upon the establishment of highways which will stand up under the strain of such heavy traffic; and

"Whereas there has been introduced into the Legislature of the State of Michigan a joint resolution, known as Senate Joint Resolution No. 1, providing for the submission to the people of the State of Michigan of an amendment to the constitution to permit the state to issue bonds in the sum of $50,000,000 for the permanent improvement of the highways, now, therefore, be it

"Resolved, that this committee favors the passage of the aforesaid resolution, and the submission to the people of said amendment to the constitution; and be it further

"Resolved, that a copy of this resolution be transmitted to the presiding officer of the Senate and the House of Representatives at Lansing, and that a copy be mailed to each of the county chairmen in the northwestern district."

ACME HAS FAITH IN SERVICE DEPARTMENT.

"It is the custom, we believe, of most of the truck manufacturers to look upon the service, or spare parts department, as a necessary evil," states Acme Angles, the official publication of the Acme Motor Truck Co. "Not so with Acme. We consider our service department one of the most important departments in the organization, having a direct bearing upon the future sales success of the company.

"We carry a complete stock of repair parts for all Acme trucks, from the first truck out to present construction, and aim to maintain a schedule of filling all orders for parts the same day order is received. Express and parcel post shipments always leave on the first train following receipt of the order.

"To avoid the possible chance of being out of certain stock at a time when it would be embarrassing to tell a user that we are entirely out of the particular part ordered, and make the customary apology, we are operating a perpetual inventory stock record system, which is kept up to date daily by making proper entries of receipts and shipments.

"In this way a separate record is kept of every part in our stock and it can be told at a glance just how many parts of a certain kind have been shipped in a given period, which information is very valuable in making purchases. It also gives an accurate record of receipts and shipments showing balance on hand, and when stock gets down to the danger point.

"No matter what may have been the deciding factor in the purchase of a truck, the one thing that will keep the owner satisfied after he buys is continuous performance. This means the truck must deliver maximum service and should the need arise at any time for repair parts the Acme user must not be unnecessarily held up.

"The service department also acts as clearing house for criticism and suggestions on Acme construction. Some of our most valuable improvements have been made after thoroughly investigating some suggestion of an Acme user."

WILL GIVE CREDIT TO BUYERS OF TRACTORS.

With $5,000,000 capitalization, the Federal Motors Finance Corporation is being organized in Detroit to extend credit to purchasers of tractors, cars and trucks. Detroit bankers, automotive men and attorneys are interested.

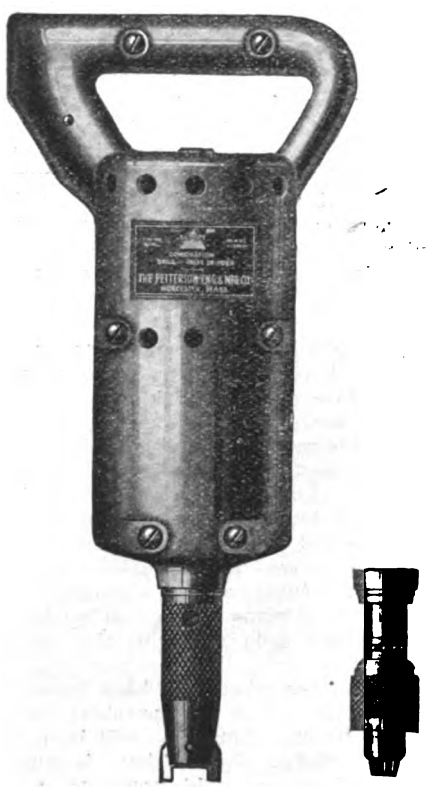
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GARAGE AND SERVICE STATION TOOLS AND EQUIPMENT

PETTERSON VALVE GRINDING TOOL.

Every repair shop today needs a power tool for regrinding valves. The Petterson Engineering and Manufacturing Co., Worcester, Mass., manufactures the Bilt-Rite Combination Drill and Valve Grinder. It is electric driven and is suited for valve grinding or drilling holes up to ¼ inch diameter. With a screw driver change from one operation to the other may be made in a few minutes, giving either an oscillating motion for valve grinding or a speedy rotary motion for drilling.

The oscillating speed is not excessive, but engineering calculations for successful grinding determine speed as indispensable. The finer the compound used the smoother the seat.



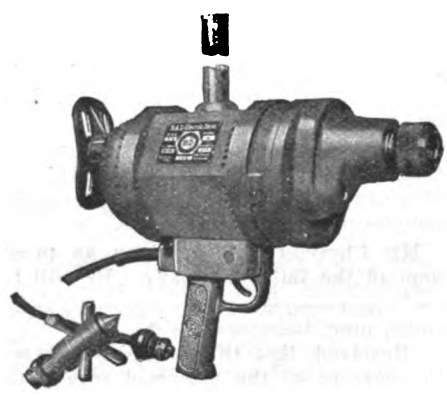
Innumerable times in repair shops or manufacturing plants a light portable drill for small miscellaneous drilling saves much time. A Bilt-Rite Electric Valve Grinder energizes the slow, tedious job and by doing it electrically cuts down labor costs.

Specifications for the combination drill and grinder are as follows: Socket plug, eight foot cord, plug attachment, cut-out switch between slip plug and motor, 1/12 horsepower motor for 110 to 130 direct current or alternating current, universal grinding chuck, drill chuck, three drivers to fit grinder chuck.

Heat treated steel gears with steel shaft and bronze bearings. Motor pinion forced on and keyed to the motor shaft. Specify higher voltage if desired. Same specifications apply on electric drill and valve grinder separately, omitting grinder chuck and drill chuck respectively. One valve spring, of a sufficient tension to allow a wide margin of safety in grinding valves as far as pressure is concerned, is furnished. Prices and literature on application.

ELECTRIC BREAST DRILL.

A tool that is very necessary in repair shops is the electric breast drill. An unusually good drill of this type is manufactured by the Black & Decker Manufacturing Co., Baltimore, Md. This drill has the pistol grip and trigger switch. in steel and weighs only 27 pounds. It is equipped with a removable No. 2 Morse This drill has a capacity of ⅞ of an inch taper socket to take the taper shank drills up to ⅞ inch in diameter. The drill



measures 5¾ inches by 17 inches long and has an offset spindle 2⅜ inches from the center of the spindle to the edge of the frame. This drill is also equipped with a light weight, high powered, series compensated motor, which develops a maximum output of more than one-half horsepower. Its light weight and automatic control provided by the "pistol grip and trigger switch" makes this drill highly adaptable to a large variety of work. Prices quoted on request.

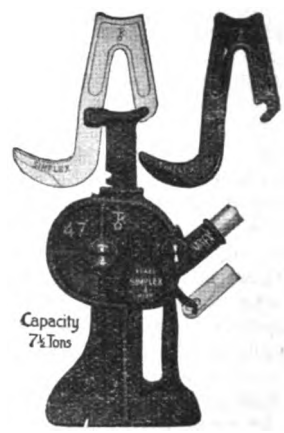
SIMPLEX TRUCK JACKS.

Truck owners know the utility of good jacks and frequently the jacks supplied by the truck manufacturers are too light



for heavy work. A jack of unusual design is manufactured for truck equipment by Templeton, Kenly & Co., Ltd., 1020 S. Central avenue, Chicago, Ill. These are the Simplex truck jacks. No. 36 Simplex is designed for light cars and trucks. No. 38 is for medium weight and is fitted with an adjustable shoe which locks at seven different heights.

No. 41 has a rated capacity of 2000 pounds, but will easily lift 5000 pounds. Every part with the exception of the frame or standard is a steel drop forging. The short stroke insures easy lifting. There are three points of lift—cap, lower foot and steel auxiliary removable shoe, the shoe being an exclusive Simplex fea-

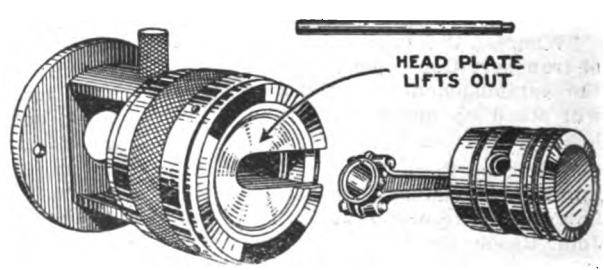


ture and is a very convenient attachment when the car is in a bad rut. The cap rotates, permitting use of the shoe in any operation. The 42, 43 and 44 sizes are built for heavy trucks and limousines. No. 47 has been designed for trucks up to 7½ tons capacity and over. Prices, $2 to $20, subject to advance.

TIME SAVER PISTON CHUCK.

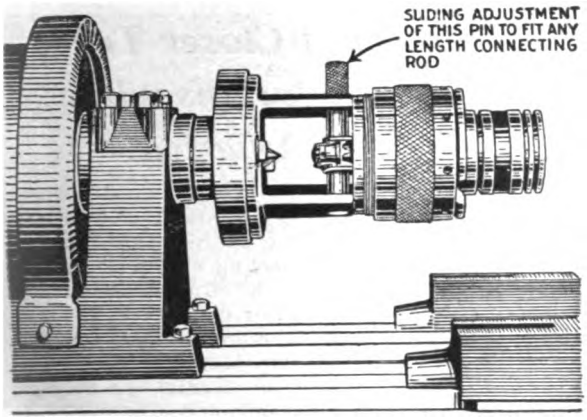
An article of particular merit is known as the Time Saver Piston Chuck, manufactured by the Time Saver Piston Chuck Co., St. Louis, Mo. Every truck engineer and repair man knows that piston rings wear the grooves in the piston, so that after an engine has been run from six months to a year retrueing the grooves is absolutely necessary if new rings are to give satisfaction.

To do this without removing the piston pin and the connecting rod from the piston, to save the time necessary to true



each piston separately in a lathe chuck, and insure against cracking a piston while chucking it, the Time Saver Piston Chuck was designed.

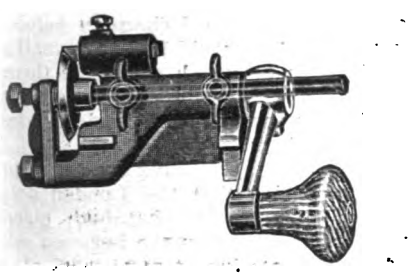
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The Time Saver Piston Chuck will hold any size piston and connecting rod and in addition it is so constructed that rough cast pistons can be turned with it. No time is lost in placing the Time Saver Piston Chuck in the lathe, it being so made that when clamped to the face plate it will run dead true. Prices on application.

SIOUX VALVE SEAT REAMER.

A handy valve seat reamer is made by Albertson & Co., Sioux City, Ia., that is known as the Sioux Valve Seat Reamer. With this set of tools any mechanic can reface valve seats perfectly, removing the carbon and all irregularities. It will



face the valve seat at the correct angle and reduces the time required for grinding valves considerably. The reamers may be had in 30, 45 and 60-degree angles and in any sizes to fit valves from one inch to four inches diameter. Pillot stems are provided in all sizes. Prices and literature on application.

PARO TANK GREASE GUN.

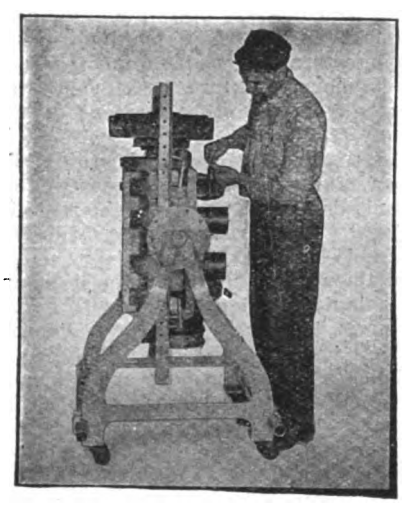
An equipment that should be economical in any garage or repair shop is a hand power grease filling tank made by H. G. Paro, 1410-12-14 S. Michigan Boulevard, Chicago, Ill. It consists of a heavy seamless steel cylinder mounted on three wheels, having five feet of hose attached to the bottom of the cylinder, with shut off valve and nozzle at the end of the hose. It measures and registers accurately the amount of grease put into a gear case or the differential, and will work equally as well on liquid oil as on heavy grease. It is equipped with two set of gears. When the crank is pushed in it disengages the low gear and immediately engages the high gears, which operate the piston either up or down at high speed. The cylinder is 20 inches long by six inches wide, and the capacity



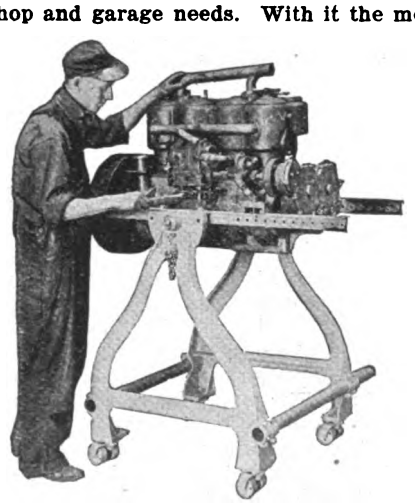
is 20 pounds of grease or 2½ gallons of oil. The piston is covered with the best quality of leather and is fitted with an expansion ring, which prevents oil or grease leaking by it. The piston also has an automatic air vent, which releases the vacuum in the cylinder when cranking the piston up for refilling. The base is provided with a step lock which lifts the castor up off the floor and sets the gun rigidly when cranking. Price, $47.50.

CONTINENTAL MOTOR STAND.

The Continental Auto Parts Co., Kingstown, Ind., manufactures an engine stand that is so designed that it will



serve equally well with all types of engines and is a real universal stand for shop and garage needs. With it the mechanic can work without stooping, bending, twisting or lying on his back on a dirty floor.

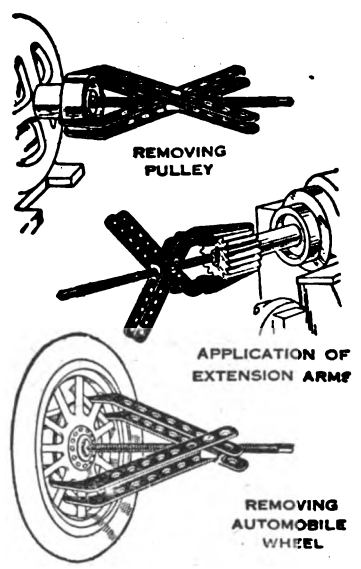


An engine in a Continental stand can be turned so any part can be so positioned that work will be convenient and good light available. The engine can be completely inverted and the lower crank case section removed, which gives a position for scraping in bearings and such work as requires considerable time, at just the right height for convenience and good workmanship.

Continental engine stands when positioned can be solidly locked with steel pins. Over 25 different locking positions allow the engine to be brought to any desired angle. Turning the engine with the axis of rotation at right angles to the crankshaft gives a range of adjustment that is ideal. The steel locking pin is permanently attached to the stand by a chain and cannot be misplaced. Prices and literature on application.

LITTLE GIANT WHEEL PULLER.

A tool that has much utility is the "Little Giant" gear and wheel puller. It is made with four puller arms of dropped forged steel and has an adjustment range from zero to 13 inches when "extension arms" are used. The puller arms are so arranged that with the draw screw in place there are four pulling points, so distributed that there is no need of a holding or steadying bar. The pulling prongs are designed to give maximum strength, yet to occupy little room. For



this reason they may be used for removing timing gears or other gears where room is limited.

This device is handy for removing inside work and for inside pulls. For removing small pulleys or gears a pair of extension arms may be used. These arms are provided with a locking arrangement for fastening to the pulling arms and provide for two pulling points rather than the four as in the primal attachment. Prompt deliveries are assured. Manufactured by Premier Electric Co., 4032 Ravenswood avenue, Chicago, Ill.

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Goodyear Trucks at Macon Show Tire Practicality.

From Akron, O., to Macon, Ga.—1325 miles—to participate in a big motor truck demonstration in the latter city, making the trip leisurely in eight days, was the latest exploitation by the Goodyear Tire and Rubber Co. of long distance transportation with two of its big pneumatic tired trucks, diverted from the company's Akron-Boston highway express service for this special journey.

The occasion for the drive was the exhibited equipment found essential for motor truck transportation at the demonstration held under the direction of the Macon Chamber of Commerce, on April 2 and 3, the first of its kind held east of the Mississippi river.

The route followed took the trucks through Cincinnati, Louisville, Nashville, Chattanooga and Atlanta, and in the main the trip was made over the Dixie highway from Cincinnati. The 712 miles between Akron and Nashville were traversed in 50 hours, total elapsed time, or 37 hours and seven minutes, actual driving time, the rate of speed maintained being 19 miles an hour.

At Nashville the fleet was officially welcomed by Gov. Roberts. At the head of a procession of about 50 local pneumatic tired trucks the Goodyear trucks paraded through the main streets of the city, after which the journey south was resumed.

Because of bad road conditions on the usual route between Nashville and Chattagoona, caused by heavy rains, the trucks were compelled to make a detour through Alabama, which added 300 miles to their mileage. Near Chattanooga they climbed the famous Lookout Mountain, moving pictures being taken of the climb.

At Atlanta an official welcome was extended by the Chamber of Commerce, the mayor of the city and Governor Hugh M. Dorsey. In each of these cities truck demonstrations were made for the benefit of local dealers.

Macon was reached the eighth day after leaving Akron, and a delivery of Goodyear tires was made to a local dealer in two weeks' faster time than is usually made in railroad freight delivery.

At Macon the trucks were turned over to the Chamber of Commerce, at whose invitation they had been sent to the city. In the big truck hauling demonstration on April 3, one Goodyear truck hauled a five-ton load from Macon to Barnesville, while the other truck transported a like load to Monticello, a distance of about 40 miles in both cases.

When the two big freighters entered the towns interested crowds gathered, for this was the first time that trucks of this size equipped with pneumatic tires had been seen in this section. The big 44 by 10-inch pneumatics on the rear wheels were the objects of much curiosity.

The drive of these trucks was made without mechanical mishap, and with only one tire change, a 12,000 mile 44 by 10-inch tire taken off in Kentucky. It was the best kind of proof of the practicability of motor truck transportation with large trucks on pneumatic tires, as far as road conditions are concerned. In fact, so complete was the success of this southern exploitation pilgrimage that in response to requests from many sources, the trucks will stay in the South indefinitely, demonstrating the practicality of motor truck hauling.

TRUCKS OPERATIVE AFTER FALL DOWN MOUNTAINS.

How motor trucks will make good in work under difficulties is illustrated in a letter received by Clifford A. Williams, director of sales of the Kissel Motor Car Co., from an engineering company that has finished road building in the mountains of West Virginia. The company used 10 Kissel "Freighter" trucks hauling materials to concrete mixers on heavy grades and narrow roads where the trucks had to make turning places every 500 feet.

This necessitated every load being turned at the turning place and then reversed and backed for the full 500 feet, usually on a nine per cent. grade. The work tested the power and durability of the trucks to the utmost. A good part of the road was built along the side of a mountain.

One truck went over the mountain side, falling 300 feet, making several complete turns before landing. It struck a frame house and tore the kitchen away entirely from the other portions of the house.

The engineering company wrote: "By reason of the truck's rigid construction the only damage done was to the radiator and seat. These repairs were made and the truck sent back to work."

Another truck plunged over a mountain side near Welch, W. Va., with a load of stone. The truck, after several turns, was left hanging on a tree. The driver was picked up unconscious and taken to a hospital. The truck was reclaimed by the use of block tackle, the cab seat and radiator repaired and the machine put back to work.

A third truck upset over a mountain side, nine men being injured. The truck was pulled back, righted and brought home under its own power.

The engineering company wrote: "These accidents did not in any way twist or damage the axles and in no way affected the smooth running of the trucks since the accidents."

E-B BUYS THE OSBORNE LINE OF HARVESTERS.

The Emerson-Brantingham Implement Co. has purchased from the International Harvester Co. the Osborne line of harvesting machinery, consisting of grain and corn binders, reapers, mowers and hay rakes. The manufacture will be continued at Auburn, N. Y., until this summer, when it will be moved to Rockford, Ill. The company has opened an export office at 66 Broadway, New York.

Want Closer Trade Relations with America.

Arrangements have been made whereby the American Chamber of Commerce in London will be represented at the forthcoming meeting of the Chamber of Commerce of the United States by a councilor and four delegates. The meeting will be held in St. Louis on April 29 and 30 and May 1. The London chamber is also planning to be represented at the annual conference of the Foreign Trade Council of the United States, which is to take place at Chicago on April 24, 25 and 26.

Commenting on the foreign trade conference, the monthly bulletin of the London chamber says that the rapidly changing situation in Anglo-American trade makes it difficult to decide exactly what subject should be presented by the London delegation, but several are under consideration. The bulletin goes on:

"One proposal that is almost certain to be made is that a definite program for the cooperation of all Chambers of Commerce in developing foreign trade should be drawn up. Considerable attention has been aroused by the proposal of last month's bulletin that all letters from individuals or firms to Chambers of Commerce in other countries should be certified by the local chamber before being sent. This would be but a small part of the plan by which chambers throughout the world would cooperate to give quicker and more active trade service to their members."

The bulletin also says that it is practically decided that the London delegation will present its chamber's plan for regular direct conference between selected representative committees of the American and British sections of each trade. It further asserts that it is possible that Great Britain's national and commercial debt to the United States, which at the present time is thought to amount to £3,000,000,000, may be discussed by the English delegates. In that case it has been suggested that American business men would be urged to give every possible consideration to opening up their markets to British traders who offer goods in which America does not specialize.

ARROW GRIP MANUFACTURING CO. IN BIG EXPANSION.

The capital stock of the Arrow Grip Manufacturing Co. has been increased from $100,000 to $500,000, and the company is about to start the erection of a new modern factory in which will be manufactured not only Arrow Grip Non-Skid Chains, but the Arrow Grip Roller Base Jack, as well as several other high grade accessories.

Arrangements have been made in New York for the handling of all export business, with offices at 16 West 61st street, Locomobile building. The company is also operating its own warehouse in Chicago.

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BETHLEHEM MEN OPTIMISTIC AS TO SOUTH.

Arthur T. Murray, president, and M. E. Kern, treasurer of the Bethlehem Motors Corporation, Allentown, Pa., recently made a tour of the South. Mr. Murray said: "The South will continue to provide, as I gather from observations, a much larger market than ever before."

Mr. Kern said: "What impressed me most was that the small farmers were buying motor truck equipment in great quantities. The farmer has begun to realize that he can get his stock and his produce to the market quick and in better shape at less cost to himself in time and money with motor trucks than was ever possible for him to do with horses and wagons, or by shipping by railroad.

"The farmer has begun to realize that there are towns not touched by railroads which are paying more for his produce than he can get from the commission agents at the railroad centers. Accordingly, he is going after the markets with his own motor truck and selling his product at a better price than it previously commanded."

NEW YORK DEALERS LEASE CLUB QUARTERS.

A better social organization for the motor vehicle trade is planned by the dealers in New York. The Automobile Dealers' Association has arranged to take two floors of the building at 1845 Broadway and will establish club quarters there. Members of the Motor Club, the Motor Truck Association and other clubs not already registered as dealer members of the A. D. A. will be eligible as associate members in the new club.

It will do away with some of the duplication of activities of the existing clubs. The financial success of the automobile show made available funds for the realization of plans that long have been held by the leading spirits in the Automobile Dealers' Association.

The lease on the premises starts May 1 and no time will be lost in getting the place ready for club purposes. There will be a restaurant, reading and meeting rooms and other features that go to make up a high class club.

Showing How Trucks Can Pay Closes Contracts

Those who buy trucks regard them from the viewpoint of investment only. If they can be convinced the machines can be operated at a profit they will engage in haulage work. The resourceful truck salesman is selling transportation, and if he can show inquirers how they can practically use trucks a contract will usually be signed.

The possibilities of cooperative trucking are seldom considered by truck salesmen. Many truck owners want to work independently as they have absolute confidence in their own business judgment. Yet frequently they will have far better return if they are willing to trust what is in effect a manager.

In Cleveland, O., the A. L. Englander Co., agent for Acme trucks, has undertaken the organization of cooperative trucking concerns with a large measure of success. The facts are briefly stated by C. L. Prior, the general manager of the company's truck department, as follows:

"We recently organized the Truck Owners' Transport Co. One man secures the business, another man runs the office and looks after collections. Owners drive their own trucks and allow the office 10 per cent. for transacting the business, which is the corporation and while it only has about $5000 paid in, yet it is a safe proposition because each man is vitally interested in the success of the company and is personally responsible for his truck. Work as secured is rotated among the members, except where companies ask for particular members or trucks with special bodies. It takes a real "boss" to run the company and we are fortunate in securing the right man. He put up a truck and put up the money to make it a success and runs it with a strong yet absolutely impartial hand.

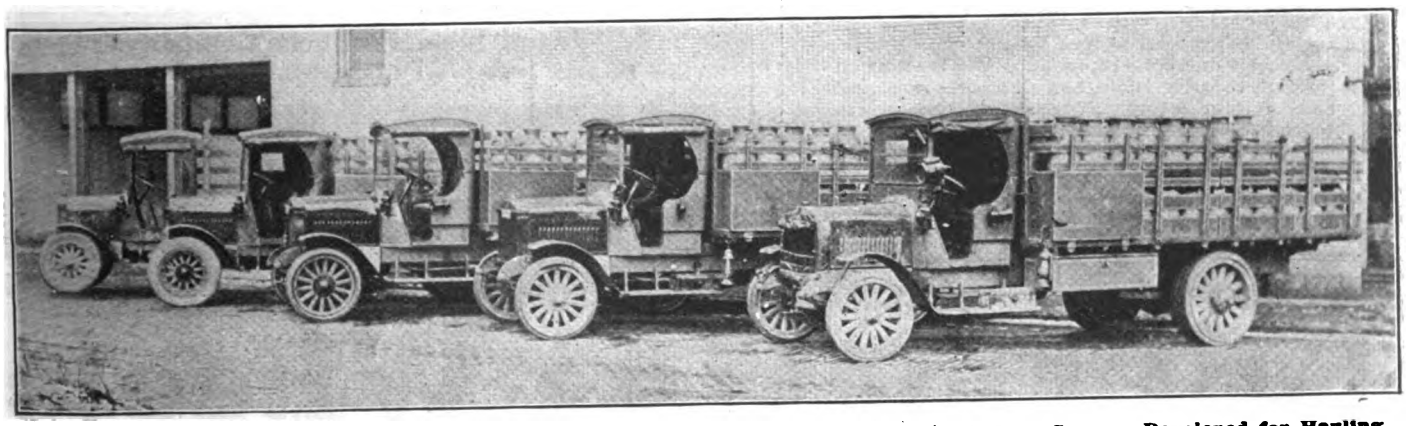
"The Clover Meadow Creamery Co. has a fleet of Acme trucks now. This company was organized to fight the trust and is composed of 400 grocers. The milk is sold to these grocers at wholesale. The grocers in the past were at the mercy of the trust and were unable to make any profit handling milk. The farmers in this part of the state were also at the mercy of the trust and this company is giving them real competition. They had a hard time getting started and we had as hard a time trying to sell the trust. We joined forces and took the milk company officials (whom we know) right out in the country among the farmers and sold the farmers the truck idea and our ability to bring the milk in daily. They gave us unofficial charge of their transportation problems and will consider nothing but Acme trucks backed by Englander service.

"To establish these rural express routes one must first find a milk dealer who will buy one complete load, then take that milk dealer and go over enough ground in the country on a paved road to secure a maximum load. We start loads when we secure enough to guarantee 60 per cent. of the rated load. We have five of these loads running, four of which bring in from $900 to $1000 per month per truck."

Statement is made by Mr. Prior that in addition to the two concerns specified nearly 100 Cleveland companies and individuals are operating, from one to four Acme trucks each, more than 175 in all, and that during the past year not a single day has been lost by an owner due to failure of a machine. This is maintained to be remarkable in view of the fact that there are 175 different drivers and the trucks are in some instances overloaded and probably poorly handled. The Englander company gives a bond for uninterrupted service to Acme truck buyers. The company estimates that the average mileage of each Acme truck in Cleveland is 50, a total of 8750 a day, or from 262,500 to 300,000 miles annually.

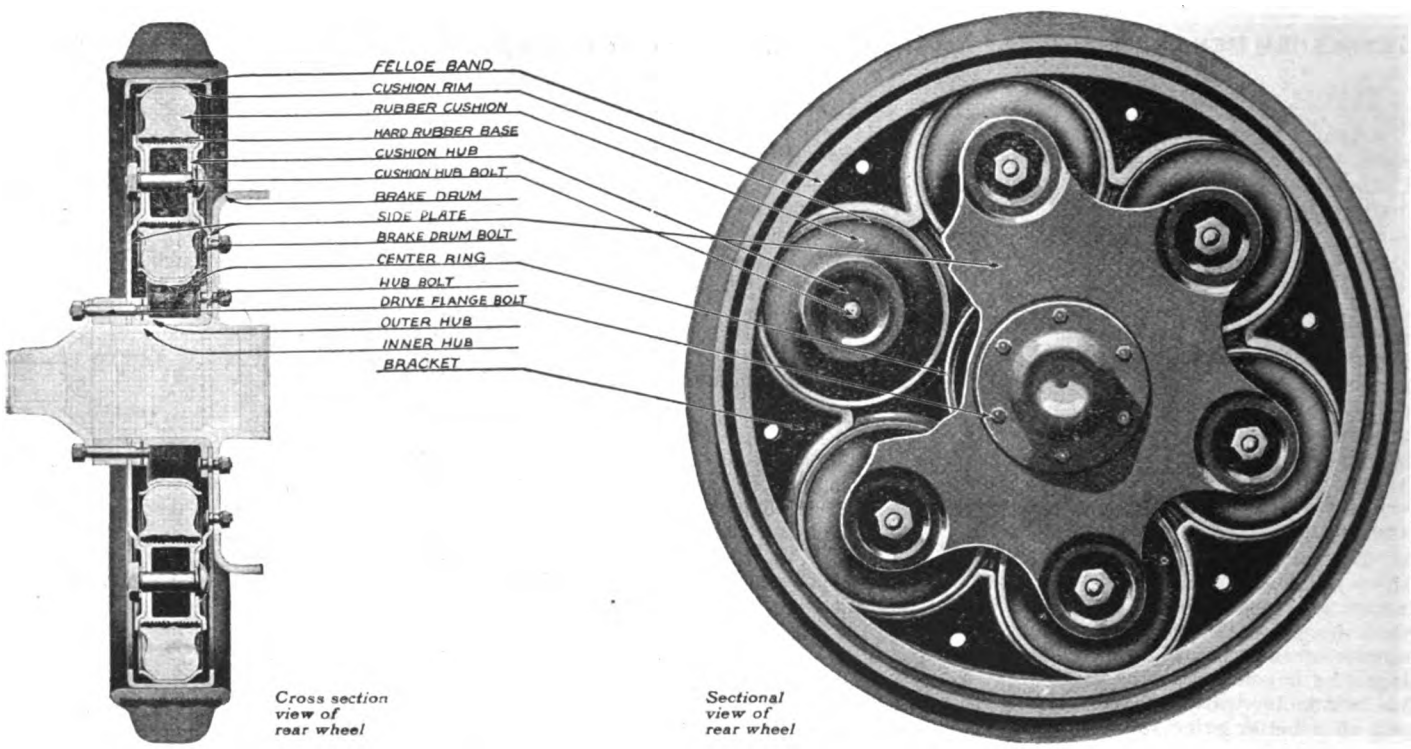
WILL SELL MASTER TRUCKS IN NEW YORK.

The Master Motor Truck Corporation of New York has been formed with offices at 1777-1779 Broadway, New York, for the sale of Master trucks. The officers are: President, C. J. Hughes; vice president and secretary, O. A. Schnell; treasurer, Rae B. Hall. The Master service station is one of the largest in New York City, comprising 20,000 square feet of floor space.



Fleet of Five Acme Trucks Operated by the Clover Meadow Creamery Co., Cleveland, O., a Concern Developed for Hauling Dairy Products by a Resourceful Sales Manager.

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Cross section view of rear wheel

Sectional view of rear wheel

Details of Construction

THE steel *"felloe band"* is made to S. A. E. dimensions so that any standard make of solid rubber tire may be used. To the inside of this band are riveted six equally spaced malleable iron *"brackets"* between which are mounted six steel *"cushion rims."* These rims are tangent to each other, and to the steel *"center ring."* All of these parts are assembled within the steel felloe band and held firmly in place by contraction of the steel felloe band. The combination forms a light, strong, rigid steel framework that cannot wear, rattle, or buckle in any direction.

The *"cushion rims"* securely retain a soft, selected grade *"rubber cushion,"* vulcanized to a *"hard rubber base"* on the outside of a small malleable iron *"cushion hub."*

It will be seen that on each side of the wheel is a steel *"side plate"* having six integral arms. The extremities of these arms fit into the hollows in the ends of the cushion hubs, and are securely clamped in place by six *"cushion hub bolts."*

Note that the cup-shaped joint between the side plate arms and the cushion hubs relieves the bolts from all shearing strain, and eliminates any possibility of wear or rattle. The central portions of the two side plates are securely fastened to a cylindrical *"outer hub"* which fits over the *"inner hub"* originally furnished on the truck. This construction ties the entire driving portion of the wheel together, and it enables each side plate to take its share of the driving strain.

The Cushions "Float" the Load

The principle of the Jaxon Full Floating Wheel is briefly this—it relieves the axle from all shocks.

On trucks equipped with Jaxon Wheels, the axle is "floated". Rubber cushions which encircle the hub absorb all of the shocks.

The cushions give to the wheel the necessary resiliency to overcome all radial, torque and side-thrust shocks—more than doubling the life of tires and increasing the durability of the truck as a whole, as well as increasing the gasoline mileage.

The cushions are held firmly in cushion rims—no moving parts to cause friction or wear.

Jaxon Full Floating Wheels are now available for a large number of makes of motor trucks. Write for descriptive catalog.

Jaxon Steel Products Company
Wheel Division, 3066 West Grand Boulevard Detroit, Michigan

JAXON

Full Floating Wheels

(When Writing to Advertisers, Please Mention MOTOR TRUCK.)

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MOTOR TRUCK
THE NATIONAL AUTHORITY OF POWER HAULAGE
VOL. X. NO. 5. PAWTUCKET, R. I. MAY, 1919.

OBTAINING TRUCK EFFICIENCY AT LONG RANGE

How the General Chemical Company Operates Its Vehicle Equipment Located at Widely Separated Plants and Warehouses to a Standard Service and Maintenance System.

TRANSPORTATION economy is only obtained with efficiency, and efficiency in turn is dependent upon numerous factors, many of which are peculiar to any given industry, so that as a rule principles only can be applied to any single instance, for the details must be determined with reference to what may be regarded as variables.

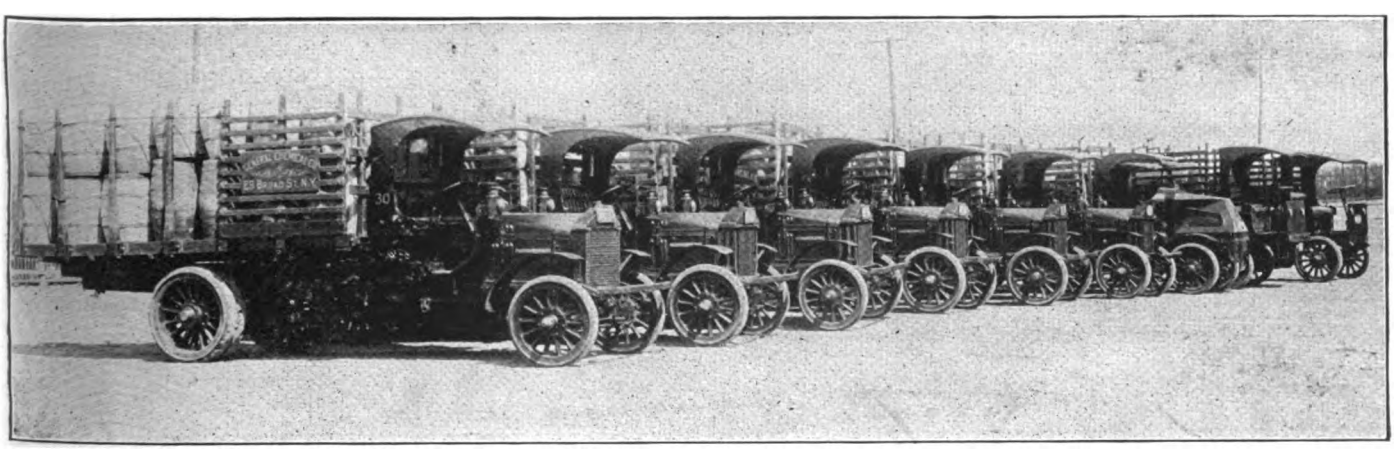
Logically, the simplest is usually the best, and accepting this as a fundamental the concern that undertakes its own transportation and can operate its own equipment from one base can better organize, systematize and supervise than one that must of necessity operate from a number of bases, because the proposition to be dealt with is the least complicated.

Concerns that operate in different sections of the country and demand that the operations in all localities be to a single system can rarely apply methods of operating and accounting that will be equally satisfactory in results without what may be termed an experimental period in which careful study shall be given to each essential factor and phase development from actual service.

There are many concerns engaged in both manufacture and distribution, some of which establish their factories as advantageously as possible with reference to supplies of fuel and raw materials, and in turn must locate their warehouses or principal distributing places to best meet the commercial demands for their products. There is every reason why the different plants and branches shall be operated by one system, and while this applies well enough to administration, to accounting, to production and perhaps in other details, but so far as transportation is concerned obtaining precise results are only practical after intensive study and careful determination of organization and operation.

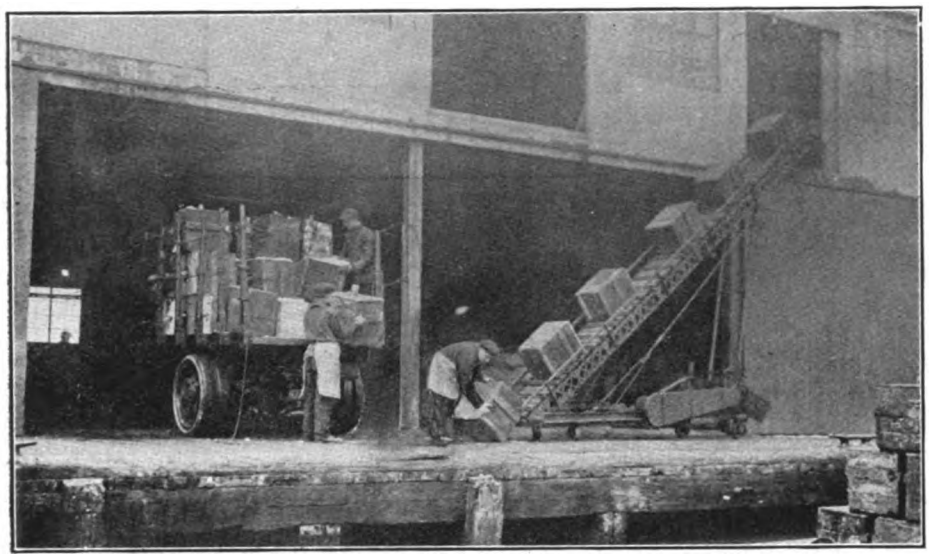
Plants Numerous and Scattered.

This article has to do with the transportation operations of the General Chemical Co., so far as these are with power vehicles. The company has general offices at 25 Broad street, New York City, with branch offices at Baltimore, Buffalo, Chicago, Cleveland, Euston, Pa.; Highlands, Philadelphia, Pittsburgh, Providence, San Francisco and Syracuse, and at Montreal. It has works and stations (distributing centers) at Baltimore, Md.; Bay Point, Cal.; Bayonne, N. J.;



Some of the Fleet of Heavy Duty Trucks Attached to the Laurel Hill Works and Warehouse of the General Chemical Co., One of the Main Plants in the Metropolitan (New York City) District.

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Unloading a Truck Freight of Acid Carboys and Sending Them by Conveyor to the Second Story of a Warehouse Located on a Dock. Trucks May Be Driven to Any Part of This Warehouse Floor from the Street.

Bridgeport, Conn.; Barnet, B. C.; Buffalo, N. Y.; Hegewich (Calumet works), Ill.; Camden, N. J.; Capelton, P. Q.; Chicago, Ill.; Cleveland, O.; Marcus Hook (Delaware works), Pa.; Passaic (Dundee works), N. J.; East St. Louis, Ill.; Easton, Pa.; Edgewater (Hudson River works), N. J.; Chicago Heights (Illinois works), Ill.; New York City (Laurel Hill works); Los Angeles, Cal.; Montreal, P. Q.; Newark, N. J.; Newell, Pa.; Peyton, Cal.; Pittsburgh, Pa.; Providence, R. I.; Pulaski, Va.; San Francisco, Cal.; St. Louis, Mo.; Sulphide, Ont.; Syracuse, N. Y., and Toronto, Ont.

The company engages in the manufacture of sulphuric, fuming sulphuric, muriatic, nitric, acetic, hydrofluric, battery and phosphoric acids and battery solutions; varying forms of soda, including sulphate, bisulphate, liquid bisulphate, sulphide crystals, phosphates, silicate, salt cake, Glauber's salt, nitre cake, lump, ground and filter alum, sulphate of alumina and epsom salt, Ryson baking powder, effervescent phosphate of soda and various insecticides and builds Herreshoff furnaces for sulphur ores.

The company was organized by the consolidation of a number of concerns, each of which specialized one or more products, and for this reason the number of specialties produced is larger than would have been manufactured by any one or perhaps several plants. As each plant was equipped for turning out one or more products there was every reason for continuing that or those which any one could produce most profitably. Locations were with reference to obtaining raw materials advantageously, and distribution aside from localities contiguous to the works were by rail and water carriers.

Centralization Not Economy.

Obviously concentration of manufacture would not be a sufficient economy to compensate for the increased cost of transportation of material and products. From this aspect, and from that of economic distribution, the location of the different plants is advantageous. The builders of these plants seemingly considered all the possibilities of receiving and shipping economically by railroad and vessels. For instance, the Laurel Hill works at Long Island City is accessible by rail and water; and this is true of the Bayonne, Edgewater, Baltimore and Hegewisch (Calumet works) plants. The other plants are generally accessible by rail. Taken as a whole the shipping and receiving facilities are at parity with other manufacturing works.

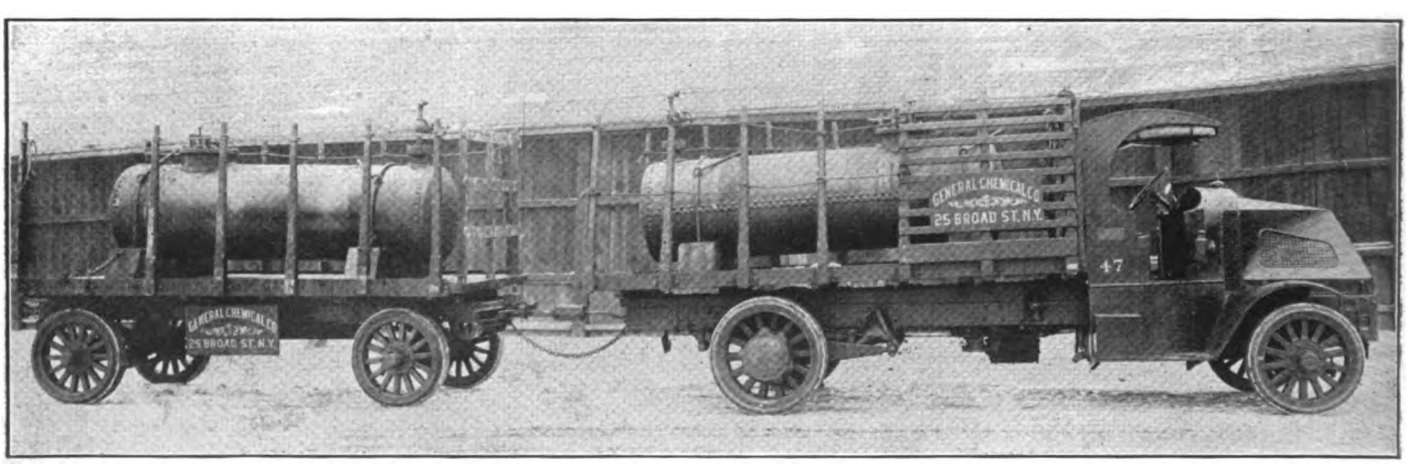
The company manufactures its products principally at the Laurel Hill, Bayonne, Edgewater, Marcus Hook, Baltimore and Calumet works, and from these shipments are made to warehouses whence distribution is made The distribution points where the company operates its own power vehicle equipment are Laurel Hill, Bayonne, Edgewater, Camden, Dundee, Pittsburgh, Providence, Baltimore, Marcus Hook and Cleveland, and in addition to these there is an automobile located at the Newell station and there is a single industrial truck used at the Calumet works

The company now has in its service 39 trucks of different capacities, four of which are fitted with passenger bodies of 40 person capacity; eight cars or passenger 'buses, 23 industrial trucks and two trailers These are operated from 12 different bases under the supervision of a manager of transportation whose office is in New York City, who is assisted by a supervisor of motor vehicle equipment and by an organization that extends to every works or station where any one of the types stated are in use. The plan of operating is such that the work of all vehicles and the industrial trucks can be directed by the manager of transportation, and the supervision is by the supervisor, who makes visits to the different works and stations as these may be necessary.

Truck Operating at Long Range.

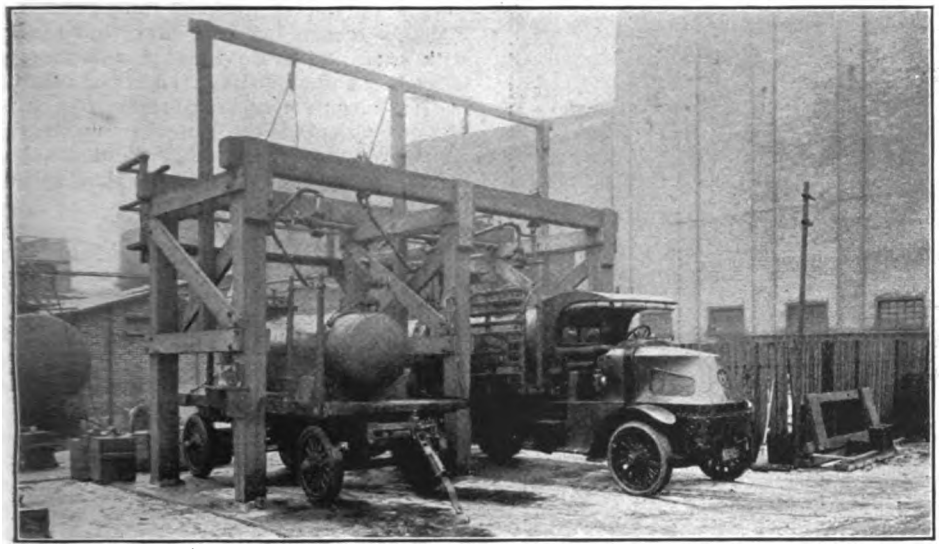
In one sense this is long range operating that must be efficient and yet cannot have the individual supervision that would be possible were the operations from a single base. The condition necessitates an organization that consists essentially of a unit for each works or station and the equipment must be operated practically independently. This does not differ in a general way from the condition that must be met by concerns that have scattered power vehicle equipment, but obviously there cannot be the same economy that would be possible were the machines all stationed at a single base and the organization reduced to the smallest number possible.

The manner of assignment of the vehicle equipment may best be shown by the following tabulation:



Tanks on a 5½-Ton Truck and a Five-Ton Trailer, Secured on Cradles Seated on the Decks, Used to Transport Liquids in Volume—These Tanks Are Demountable.

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"Gallows" Used for Storing and Filling the Tanks for Volume Delivery. Here the Tanks Are Lowered on the Decks and Secured for Haulage.

	Trucks	Cars	Industrial Trucks	Trailers
Laurel Hill	12	2	4	1
Bayonne	4	1	5	1
Edgewater	3	1	4	0
Camden	7	1	2	0
Dundee	2	0	0	0
Pittsburgh	1	0	0	0
Providence	3	0	0	0
Baltimore	1	0	2	0
Marcus Hook	*5	1	5	0
Newell	0	1	0	0
Cleveland	1	1	0	0
Calumet	0	0	1	0
Total	39	8	23	2

One will note that this is a total of 47 road vehicles and 23 trucks used in inter-factory work, a total of 70, of which 35 are used for distribution and 23 for production or warehouse work.

The Assignment of Vehicles.

The assignment of the machines is based upon the need in each works or station is as follows:

Laurel Hill: Six five-ton Pierce-Arrow trucks, one two-ton Pierce-Arrow truck, one 5½-ton Mack AC truck, two 3½-ton Atlantic electric trucks, one six-ton Commercial electric truck, one 1½-ton Smith Form-a-Truck, one five-ton Detroit trailer.

Bayonne: Two five-ton Pierce-Arrow trucks, two Mack 5½ton trucks, one five-ton trailer.

Edgewater: Two five-ton Pierce-Arrow trucks, one Hurlburt 1½-ton truck.

Camden: Seven five-ton Pierce-Arrow trucks.

Dundee: Two five-ton Pierce-Arrow trucks.

Pittsburgh: One five-ton Pierce-Arrow truck.

Providence: Three five-ton Pierce-Arrow trucks.

Baltimore: One four-ton Packard truck.

Marcus Hook: One five-ton Piece-Arrow truck, four 3½-ton Hurlburt chassis equipped with 40-passenger bodies.

Cleveland: One 1½-ton Ford truck.

The assignment of the industrial trucks is as follows:

Laurel Hill: One G-V tractor, three two-ton Buda trucks.

Bayonne: One two-ton Galion truck, four two-ton Automatic trucks.

Edgewater: Two two-ton Buda trucks, one two-ton Automatic truck, one two-ton Galion truck.

Camden: Two two-ton Buda trucks.

Baltimore: Two two-ton Hunt trucks.

Marcus Hook: Two two-ton Elwell-Parker trucks, two two-ton Hunt trucks, one Galion two-ton truck.

Calumet: One two-ton Buda truck.

The assignment of the cars is as follows:

Laurel Hill: One Ford service car, one Ford sedan.

Bayonne: One Ford car.

Edgewater: One Ford touring car.

Camden: One Ford passenger car.

Marcus Hook: One Ford 'bus.

Cleveland: One Ford 'bus.

Newell: One Ford service car.

Vehicles at 12 Localities.

One will note that of the 12 works and stations at which vehicles are assigned 10 have trucks and six of these 10 have cars. One has a single passenger 'bus only. Seven of these works and stations have electric industrial trucks and of these seven six operate trucks as well. One works operating an industrial truck has neither trucks or cars assigned. Two of the works, Laurel Hill and Bayonne, operate trailers with trucks, one trailer unit being assigned to each. While all of the industrial trucks are electric, but three of the freight trucks are driven by this power, these being located at Laurel Hill.

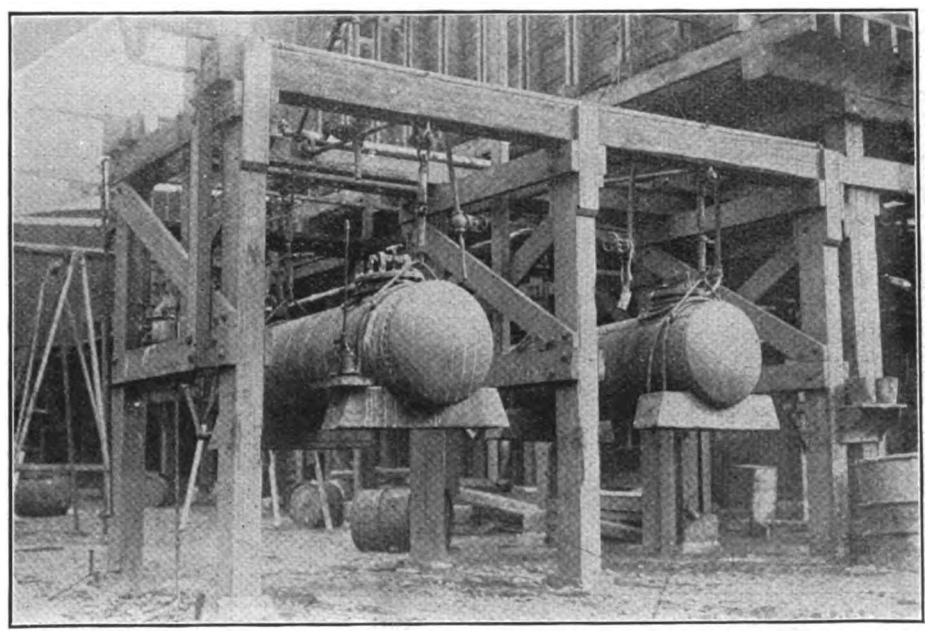
The works and stations or warehouses total 31, and of these 19 have no power transportation equipment attached. The haulage to and from these is done by animal vehicles or by contractors or by customers or buyers. For convenience in reference the works and warehouses or stations may be located as two in New England, 12 in the Atlantic coast states, six in Great Lake cities, two East of the Mississippi river, five West of the Mississippi river and four in Canada.

Undoubtedly the greater part of the business of the company is East of the Mississippi river, at least as indicated by the location of the plants and stations, and those in New York City and vicinity, in Marcus Hook and in Baltimore are the largest and most important. What is known as the Metropolitan district, which includes New York and the cities and towns within a radius of 25 miles from the New York city hall has a population of approximately 8,000,000; the Philadelphia district has at least 3,000,000 inhabitants, and the Baltimore district more than 1,000,000, and regarded from the viewpoint of commercial or industrial activities the business possibilities are very large.

Trucks at Six Groups of Plants.

The company makes shipment of products by rail and water carriers from all the works and warehouses, but if the plants and stations are grouped for the purpose of considering power vehicle transportation they will be reduced to six groups. the New York group including Laurel Hill, Bayonne, Edgewater and Dundee; the Philadelphia group including Marcus Hook and Camden, and the Providence, Baltimore, Pittsburgh and Cleveland districts in which trucks are operated.

The distribution of products by truck or power vehicle is within what may be termed a practical operating radius,



Demountable Tanks Suspended from "Gallows." These Are Raised and Lowered by Turnbuckles and Ratchet Levers That Are Operated Manually.

*Four equipped and used for passenger service.

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Moving Products with an Industrial Truck Used as a Tractor That Is Hauling Two Trailers Fully Loaded to a Loading Platform.

usually less than 25 miles from the base or plant, but there are, of course, instances where haulage is made considerably in excess of these radii.

The company has used power trucks for general transportation for eight years, and has gradually increased its equipment. The policy has been to standardize its vehicles and this has been done in a general way, for it now owns 25 Pierce-Arrow trucks and eight Ford machines. The other units are of five different makes, five being the largest number of any other one make. The electric trucks have been used for six years, the Atlantic machines being bought in 1913 and the Commercial truck in 1914.

Products in Different Forms.

The manner of operating the trucks has been carefully developed by experience, much attention having been directed to obtaining economy and efficiency. The policy of the company is broad and there has been consideration of the drivers so far as practicable. The products are prepared for shipment in varying forms, the acids being usually in carboys or drums and the others in sacks, cases or barrels, the containers being whatever type may be necessary to protect them and what can be handled by the trucks and by the buyers. These are stored at the works and the warehouses and are distributed according to demands, the deliveries being from single shipping units up to full loads or more.

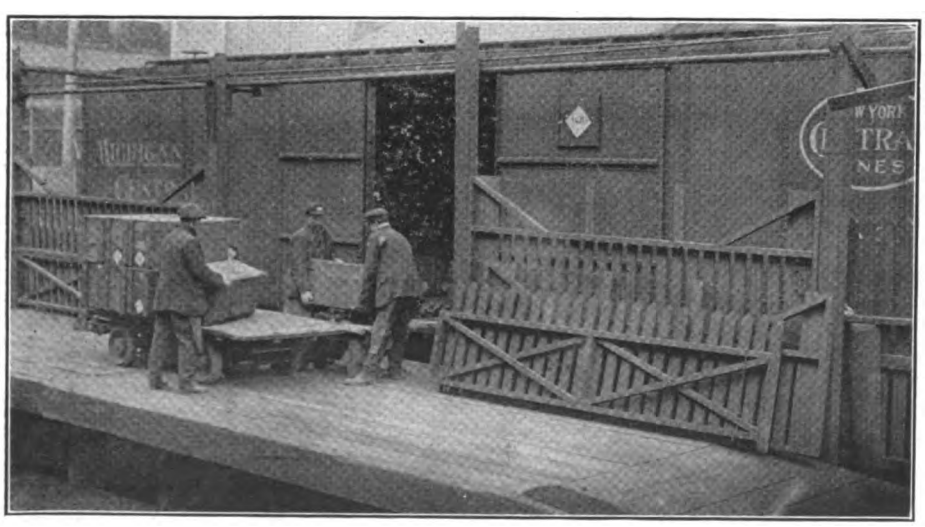


Freighting a Truck with Products Hauled to the Platform and on to the Deck of the Machine by an Industrial Unit. A Big Crew Does the Work Quickly.

The dry products can be handled quickly and easily, but the liquids, especially the acids in carboys, must be guarded against damage, for breaking will not only mean loss by leakage, but destruction of the metal work of the vehicles. For this reason handling must be done with care and more time is necessary in loading and unloading freights of acids in fragile containers than is required for cargoes of sacks, cases or barrels that can be stacked or placed without much consideration for anything else than general security in transit.

Some Deliveries in Bulk.

In some instances deliveries of product can be best made by tank. These are to large consumers whose plants are so equipped that they have facilities for tank storage, and whose operations are such they require considerable volumes. The handling of the products by customers must be as economical as possible, and tankage is far more advantageous than the use of small containers that must be handled manually. Such deliveries, however, are not sufficiently numerous as to require much special equipment, and are only made from two plants.



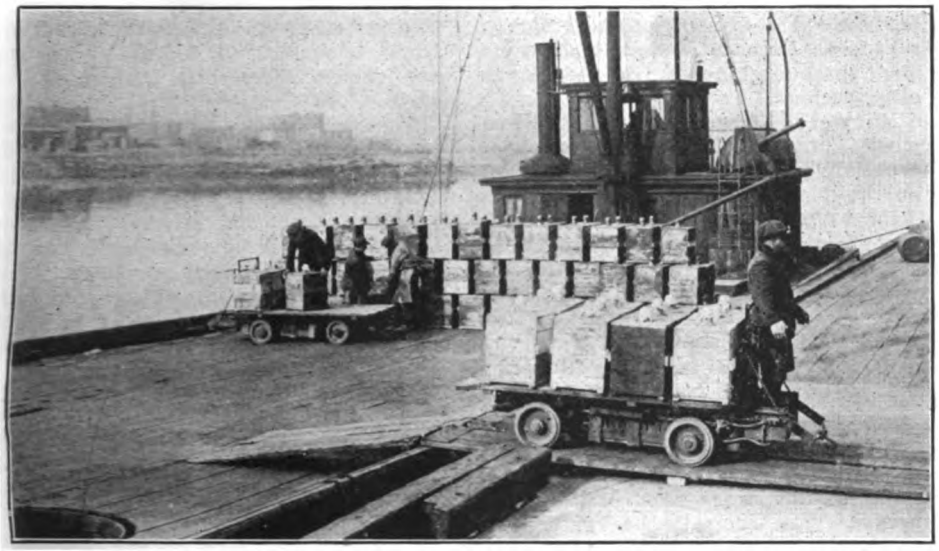
Loading Carboys from a Two-Ton Industrial Truck Into a Freight Car, a Roller Skid Minimizing the Handling.

Generally the loads hauled are full freights; only in emergencies are less than capacity loads sent out, and in some instances a small truck is maintained for such deliveries. The equipment includes three 1½-ton trucks, one two-ton truck, six 3½-ton trucks, one four-ton truck, 24 five-ton trucks, three 5½-ton trucks and one six-ton truck. There are 1½-ton trucks at Laurel Hill, Edgewater and Cleveland, a two-ton truck at Laurel Hill, two 3½-ton trucks at Laurel Hill and four of the same size at Marcus Hook, and there are 28 machines of five tons or greater capacity at eight different plants or stations.

The Laurel Hill, Bayonne, Edgewater and Dundee works and warehouses may be regarded as in the Metropolitan district of New York, and the number of trucks used total 21, 12 at Laurel Hill, four at Bayonne, three at Edgewater and two at Dundee. There is a warehouse only at Dundee, so that stock distributed from this must be transferred there from the other plants.

Highway haulage in the Metropolitan costs more than in any other part of America because practically every item

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Unloading a Big Lighter with Industrial Trucks That Are Taken to the Deck of the Vessel and Climb the Runways with Capacity Freights.

of expense is greater than elsewhere, this applying both to operating and overhead. The street conditions are rarely comparable with those of other small communities, the traffic is extremely heavy and the delays are frequent, travel must be over comparatively few routes because of the concentration necessitated by bridges between Brooklyn and Manhattan and ferries between Manhattan and Jersey City and Hoboken, and the mileage that can be driven in a given period is considerably less than where the topographical and street conditions are more favorable. Direct routes, such as are usually practical in other cities, cannot be selected. Each year the traffic is heavier and the delays longer and more frequent. Seemingly no changes that will increase the average speed of traffic or lessen the congestion are practical.

There are innumerable possibilities for improvement, but the initial cost and the operating expense, as applied to business, and the public expense, as applied to municipalities, are practically prohibitive. This being so the individual operator of vehicle equipment can only obtain economy by thorough understanding of all the conditions affecting operation of transport, and by adaptation of operating methods to do the largest degree of useful work in the shortest time and with the least labor that is practical.

Distribution by Power Vehicle.

Considering the different warehouses of the General Chemical Co. as the operating bases for the transportation equipment. From that at Laurel Hill distribution of products is made throughout New York City, which includes Manhattan, the Bronx, Staten Island, Brooklyn and Queens (which is the western section of Long Island east of Brooklyn), parts of New Jersey as far west as Passaic and Newark. Very rarely are loads sent north of New York City. Deliveries of all kinds are made, however, those to Manhattan, the Bronx and Staten Island and New Jersey necessitating the use of general routes that converge at bridges and ferries.

Distribution from Bayonne is made to Newark, Orange and East and West Orange and to Jersey City. Local shipments are made from the Edgewater works to practically all parts of the Metropolitan district and to Jersey City and Hoboken and Wehawken, and from Dundee to the Oranges, Newark, Passaic, Patterson and Hackensack and adjacent towns and cities.

The works at Laurel Hill, Edgewater and Bayonne are located at tidewater, and the storehouses are constructed with ample loading platforms. The storehouses are so located that the trucks may be driven into them, and the vehicles can be loaded inside as well as at the platforms. An advantage of dock or wharf warehouses is shown in an accompanying illustration where a truck loaded with empty carboys is unloading inside a building, the tailgate close to the wide sliding doors, through which there is access to the open deck of the wharf. At this door a portable conveyor has been located and with this the carboys are being sent to the second story of the building. At the dock is moored a lighter, and were there need the load from the truck could be run to the lighter's deck with skids by gravity, which would save time and labor. As this was an instance at a warehouse it illustrates the manner of operating facilities that are designed to afford time and labor economies. The conveyor illustrated is operated by electric power and it may be located wherever practical within the radius of the power cable.

Quick Loading of the Trucks.

Loading at the works has been studied to save the time of the trucks. The products are shipped in as large containers or cases as can be handled conveniently. Where practical the units are taken from the warehouses on industrial trucks that can be located on the loading platforms, or even run on to the machines and the freights transferred with minimum handling. The same method may be applied to unloading trucks at warehouses having industrial truck equipment. An accompanying illustration shows a truck at a loading platform being freighted from an industrial truck. With such equipment several men can work advantageously and the loading time of the machines minimized.

With abundant labor the time of the trucks at the warehouses loading platforms can be in large measure controlled, but when deliveries are made the driver and his helper must do the work, papers must be signatured and transferred, perhaps waits for other vehicles are necessary and picksups must be made (for the trucks collect the liquid containers, and what with traffic, street obstruction and ferry delays the delivery time is exceedingly variable.

Tank Delivery Equipment.

The trucks are equipped with platform bodies, which are the best, when fitted with rack sides and tailgates for hauling loads that are both bulky and often heavy. At Laurel Hill and Bayonne tank equipment is provided so that delivery of liquids in bulk may be made. The tanks are steel cylinders having capacity for approximately 1000 gallons each, with large filling manholes. These are used with large scaffolds that are known as "gallows," each of which has capacity for two tanks. The tanks have wooden cradles at either end that are con-



The Manner of Handling Products Loading Cars Before the Use of Industrial and Highway Trucks Emphasizes the Economy and Efficiency of Machine Equipment.

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structed to seat solidly on the decks of the truck used as a tractor and the five-ton trailer it hauls.

Near each end of the tank is a steel rod encircling it, to each of which is attached a "bail" or sling. In the center of heavy cross timbers above the stalls in the gallows are eye bolts, and suspended from these are heavy turnbuckles, with hooks at either end, that are designed to be turned with hand levers fitted with ratchets. The turnbuckles may be swung out of the way when not carrying the tanks. Two tanks are used with each "gallows." These are lowered to seat on the decks of the truck and trailer and are secured by anchor bolts that hook on one end and plates that fasten through side stake pockets. These bolts are tightened by turn buckles. The delivery tanks are filled by pumpage from storage tanks and this requires approximately 20 minutes. Delivery is by gravity from the portable tanks. The delivery tanks are placed on the trucks and trailers as needed, and when so placed are usually used an entire day or more. When not in use they are kept suspended from the "gallows." The tanks can be placed on the trucks and trailers in a very short time and removing them may be quickly done with practically no labor. With the levers the tanks are raised or lowered with comparative ease.

Special Bodies for Trucks.

Because the trucks are used to haul acids and alkalines, and the former are destructive of metals, the bodies are constructed with special decks that are intended to prevent drainage upon the chassis in the event of breakage of containers or leakage. The bodies are the open platform stake type and the decks are lowest at the rear ends. The decks are constructed with bases of 1½-inch oak plank and the edges are sheathed the entire length with quarter inch iron plate to which the stake side pockets are secured. The side plates rise above the floors about two inches. The first floor is coated with hot pitch and on this is laid tarred paper. This paper is next coated with hot pitch and while heated the upper floor of inch oak, six inches wide, is laid. The planking is secured with nails, which can be removed should there be need, when screws might be so destroyed that [illegible] could not be taken out of the w[illegible] decks are preserved by frequ[illegible] flushing with water and acids are neutralized with alkalines.

Distribution is not made in considerable volume from all the works. For instance, at Marcus Hook, Pa., is the Delaware works, which is a new and splendidly equipped plant. From this a very large part of the products are shipped to Camden, whence they are distributed through the Philadelphia district, much going to textile manufacturers and mills. The Marcus Hook plant is about 22 miles from Philadelphia, and the shipments are made by railroad. Only one large truck is used at this plant, but the company operates four 40-passenger 'buses between the works and the "colony," a section two miles distant, where the company built a large number of homes for its employees, and for their convenience inaugurated a transportation service to schedule. Because of their body equipment these machines can be used for no other purpose.

Many of the largest buyers of the company's products are mills and shops, especially those manufacturing textiles, and at Camden, which serves the Philadelphia district, and at Providence, which is the center of a large textile mill zone, the trucks are used principally for distribution to this class of customers. At Philadelphia the narrow streets and the congestion of traffic precludes the use of trailers, with which the loads could be considerably increased.

Record of Work and Cost.

In the general operation of the truck equipment each works or storehouse is a separate unit so far as records are concerned. The company has garages at practically all places where vehicles are used and a service station at Laurel Hill, The use of the machines is directed by the works or warehouse superintendent, though the supervision may be by an assistant superintendent or a yard foreman. At the service station at Laurel Hill the machines are regularly inspected monthly by the station foreman, but elsewhere they are examined by a foreman-driver. Other examinations are made should these be considered necessary. Reports of the condition of the vehicles is submitted to the superintendent, who directs works necessary for adjustment and minor repair. Major repair or overhaul is directed from the main office by the supervisor of motor equipment. In some instances work is ordered at outside service stations, but where this is practical the machines are ordered to the Laurel Hill service station, as from Providence.

In such event a requisition is made on the works or warehouse for a specified vehicle and it is sent over the road to Laurel Hill with a full load. If necessary another vehicle is sent to replace it, also carrying a load. After the overhaul the machine is thoroughly tested in service —from one to two weeks being required for this work—and then it is returned over the road with a full load, the return being made on requisition. For complete overhaul withdrawal of from four to six weeks is customary.

Inspection Reports Checked.

In addition to the monthly inspections the Pierce-Arrow and Hurlburt trucks are inspected by the manufacturers, whose inspectors examine them systematically at intervals of two or three months, and these outside reports are used to check the reports submitted by the company's own service.

The trucks are equipped with recorders that indicate the time of daily service, the moving time, the idle time and the speed on charts, and summaries made from the charts are prepared and are submitted weekly to the manager of transportation at the main office. These summaries are examined and compared and from these records recommendations are made that have to do with efficiency, time economy, study of loading and unloading conditions, routes, traffic and other factors that have direct bearing. The variable items of operating cost are similarly summarized for each truck and are shown in reports submitted for study.

The maintenance of the three electric trucks attached to the Laurel Hill works is by the same organization, but the upkeep of the batteries, the motors, the electrical equipment of these machines, is by the plant electricians. For the trucks Exide batteries are used. These are charged at night. The station has complete charging equipment and facilities for doing whatever work is desirable for economic maintenance.

Use of Industrial Trucks.

The industrial trucks used at the different plants are equipped with Edison batteries and they are maintained by the electrical departments of the works. The trucks are operated in the yards and buildings, often hauling heavy loads, and the average number of trailers used when loads are not carried on the truck platforms is four. The saving of time and labor with these trucks is large and they are adapted for many uses.

The work done with the trucks is necessarily variable, but they are driven from 900 to 1200 miles a month. They are not overloaded, but so far as possible they carry full loads. Partial loads are generally carried, for the machines collect containers as deliveries are made. The trucks used as tractors with the trailers have made three deliveries a day with a round trip of 18 miles.

The cars are operated with reference to needs and the mileage is more variable. These machines are maintained as are the trucks and so far as practical the same record of work and operating cost is kept.

The accounting system of the company is now in development—that is, endeavor is being made to obtain more accurate knowledge of work and cost detail and to simplify the records so far as this is possible. As a whole the results with company-owned equipment evidence substantial economies of time and labor when compared with any other method of transportation and amply justify the use of power vehicles.

SALES OF MACK TRUCKS IN APRIL INCREASE 22%.

The sales of Mack trucks in April showed a gain of 22% over the sales for March, the International Motor Co. announces. Forty-five per cent. of these sales were of heavy duty trucks. There is claimed to be a marked growth in the popularity of Mack trucks with drivers and owners who appreciate the economy and efficiency of high quality units. The steady increase in the sales of Mack trucks is the result of such service as that of a Mack machine at Plattesville, Wis., which was driven 30,000 miles with an expense of only $65 for repairs, and this the result of the driver allowing the motor to freeze last winter; and another at Utica, N. Y., which has a mileage of more than 25,000 miles and has had no repairs other than the valves being ground twice.

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DEALERS NATIONAL ASSOCIATION MAKES PROTEST AGAINST 5% TRUCK REVENUE TAX

INTERPRETATION of the law imposing excise taxes on power vehicles, made by the Internal Revenue Bureau of the Treasury Department, unless modified, will classify a truck chassis as a "part" and subject to a five per cent. tax, and a chassis and body as a "complete vehicle," the duty on which shall be three per cent.

The incongruity of this ruling is obvious. No matter what the basis for the ruling the fact remains that as the law is applied the tax on the "incomplete" unit will be more than on the complete machine. There can be no doubt that this result was not intended by Congress.

What may happen under this ruling, and there appears to be no other result if the minimum tax is to be paid, is to have all truck bodies built and installed by chassis manufacturers.

Assuming a specific instance where a truck chassis is sold by a manufacturer with a body, the tax would then be as follows:

Chassis, list price	$5000	
Body, list price	500	
Total	$5500	$5500
Tax at 3%		165
Complete truck, plus tax		$5665

Were the truck chassis sold and a body built by a local builder the tax would then be:

Chassis, list price	$5000	
Body, list price	500	
Total	$5500	$5500
Tax at 5%		275
Complete truck, plus tax		$5775

But, strangely enough, a tractor chassis is not taxed. There is reason to believe that the purpose of the bill was to exempt farm tractors, but as the application of the term is not specific the bureau interprets it to mean a highway tractor, such as is used with either semi-trailer or trailer.

According to the same interpretation the parts necessary for repair, aside from bolts, nuts, washers, screws, etc., are taxable at the rate of five per cent.

There are many phases that might eventuate and the application might vary, but these are pointed out to show the inconsistency of the ruling. For instance, if a truck dealer were to sell a truck chassis to a customer and supply a body for it from his own shop he becomes a producer and the truck as completed is subject to a three per cent. tax., and the chassis, having been a part, would be taxed five per cent. One clause of the general ruling states that "A usable, substantially completed automobile truck produced by assembling new parts of trucks or cars, is subject to tax." Another specifies that "Automobiles which have been sold by the manufacturer are not taxable when sold again." But one definition of a manufacturer is a "person who produces the preparation of the article for purposes of resale."

Another ambiguous clause of the ruling is that which provides that "rear portions of automobile trucks, automobile wagons and other automobiles, not properly called trailers, are taxable as a part of the automobile. This is evidently applied to conversion units for car chassis.

There is no question that the condition that arises is serious in that the manufacturers, dealers and buyers have been misled, primarily from the fact that the 1918 decisions of the revenue bill classified truck chassis as the unit of sale.

According to the Internal Revenue Bureau the taxes are retroactive to Feb. 25, so that all chassis sold on and after that date should have carried a tax of five per cent. instead of three, and the three per cent. tax was passed on from the manufacturers.

The National Automobile Dealers' Association has taken this matter up vigorously and has urged its members and affiliated associations to wire and write to Internal Revenue Collector Daniel G. Roper at Washington, protesting against the ruling. The local and state associations are advised to meet and take action that may bring about a modification of the ruling.

The association points out that the loss from all sales made may be largely borne by the dealers, as the manufacturers may be able through their contracts to demand and recover this from their representatives, but the dealers cannot expect their customers will pay the additional two per cent.

The association wired George H. Graham, sales manager of the Pierce-Arrow Motor Car Co., and chairman of the motor truck division of the National Automobile Chamber of Commerce as follows:

> Treasury Department decision, article 15, regulation 47, that a truck chassis is a part and taxable at five per cent. will cost dealers thousands of dollars and cause increased difficulty in selling. We will make strong protest to Roper and send delegation to Washington if necessary. What have the manufacturers done and how can we assist further?

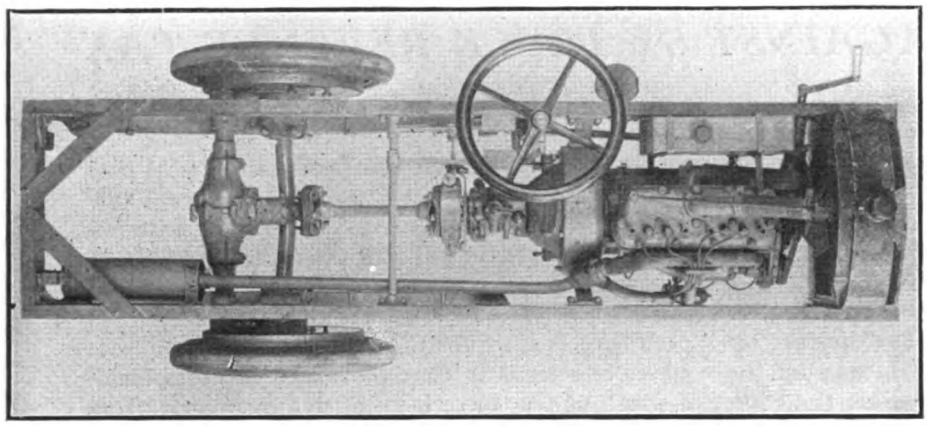
The following was also sent to Internal Revenue Collector Roper at Washington:

> Treasury decision, article 15, regulation 47, classifying truck chassis as a part is contrary to all sales usage. Truck chassis is a sales unit and is the basis of all truck sales regardless of the type or kind of body used. Therefore, classification as a part is not only an injustice, but greatly impedes truck sales and is a penalty on business. Revision of decision, therefore, should be made so that truck chassis when sold complete as a unit takes three per cent. tax, which we believe was intended when the 1918 revenue bill was framed.

There is no question whatever that as much pressure as is possible will be exerted by the dealers through their association and individually to obtain a modification of the ruling.

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CLARK GASOLINE TRUCTRACTOR



The Stripped Chassis, Top View, of the Clark Gasoline Tructractor, a Three-Wheel Type, Driven by the Forward Wheels and Steered by the Rear Wheel.

THIS machine is claimed to be the first specially designed gasoline industrial truck and tractor on the market. It has a broad field of usefulness and is replacing hand trucks, wheelbarrows and horse drawn equipment in factories, foundries, warehouses and the like, as well as in the construction and contracting industries in the building of roads and highway hauling and for farm work.

As a truck it carries a 1½-ton load and as a tractor it will haul a number of loaded trailers. The machine is built with three wheels, two in front, which carries the load, and a single wheel at the rear that is used for steering. The tructractor is designed directly opposite from the conventional automobile. The radiator is at the rear end and what would be considered the rear end of an automobile is the forward end of this machine. The driver's seat is located at the rear of the engine hood and the operator sits with his back to the radiator.

The power plant used is a four-cylinder, four-cycle, water cooled, vertical type engine. The cylinder bore is 3⅛ inches and the stroke is 4½ inches. The power from the engine is transmitted through a non-adjustable, multiple disc clutch. The transmission gearset is of the selective type, having three forward speed ratios and reverse. The drive axle is of the internal type, the power being transmitted from the clutch by means of a shaft and gears to the axle.

The gasoline tank is made from steel, with the joints welded and is placed at the right side under the engine hood.

The engine is cooled by a circulation of water through the engine jacket and a large radiator mounted on the chassis frame, the water being forced through it by a pump. A large fan is carried on a bracket on the top of the timing gearset case, that is driven by a belt from a pulley on the outside end of the water pump shaft.

The starting crank and switch are located at the right side, the switch being fastened on the frame and the starting crankshaft fitting through a hole in the frame. The shaft is supported in a bracket which is part of the lower section of the crank case and a worm at the inner end of the shaft meshes with a gear at the extreme end of the crankshaft. By revolving the starting shaft the engine is therefore turned over so that it can be started to operate.

The steering is by a worm and sector, the motion being carried through a steering knuckle on the lower end of the steering post to the horizontal steering rod. The other end of this rod is fastened to the rear wheel knuckle, so that the turning of the rear wheel is controlled by the operator by means of the steering wheel.

The rear wheel oscillates in a large vertical bearing which is fastened to the chassis frame. The wheels are a single piece metal disc and the front wheels are fitted with roller bearings and the rear with an annular bearing. The chassis frame is made from angular section steel and is substantially braced at the forward end. The front axle is carried on extra long, almost flat, semi-elliptic springs, the ends of the springs being held in brackets, the rear ends being also provided with yokes to take care of the swing of the spring as it is flattened, with weight being added to the vehicle.

The wheelbase of the machine is 72 inches and the tread is 35½ inches. The length over all is 112 inches, the width over all is 42 inches, with a height to the body floor of 28 inches and a ground clearance of 9½ inches.

The approximate weight of the vehicle is 2050 pounds and a speed of one to 15 miles per hour is obtained with a gasoline consumption of three gallons per day when the tructractor is in constant use.

Special wheels and bodies, such as cargo, dump or platform, are interchangeable with the standard equipment.

OILTITE UNIVERSAL JOINTS.

The "Oiltite" Universal Joint, manufactured by the Acme Universal Joint Manufacturing Co., Kalamazoo, Mich., is a new type and has many interesting qualities. The chief feature of the "Oiltite" universal joint is the oil retaining device. Each journal has its own oil retaining cup, inserted in the transmission ring. The journals, being integral parts of the yoke, are hardened and ground, and work in hardened and ground steel bushings which fit the oil retaining cups. The oil retainers extend far enough beyond the journals so as to form a space of sufficient capacity for the entire season's use.

This construction absolutely excludes dust and dirt from the bearings, insuring long continued service, and still no housing or torque tube is necessary. The manufacturer claims that once filled with oil an "oiltite" joint will run 50,000 miles without the loss of a drop of lubricant.

It is further claimed that this joint has fewer parts than other types; that all vital parts are made from drop forgings; that "Oiltite" joints will run at an angle of 15 degrees greater than any other joint; that all parts are interchangeable, are accurately ground and machined; that it can be installed at a minimum of expense on practically any machine. The drive shafts and connecting yokes can be placed in position and securely attached by four cap screws at the front and rear joints.

The manufacturers will supply free of charge a sample "Oiltite" joint for a car or truck, providing it will be given a thorough test.

CLAUDEL CARBURETOR SALES AGENCY.

E. J. Conill, licensee, and Israel Ludlow have established offices in the Aeolian building, 17 West 42nd street, New York City, for the sale of Claudel carburetors in the United States, and have developed a sales organization that will be directed by A. H. Doolittle, general manager, with an office in Detroit, which will be located in the Garfield building, Woodward avenue, in charge of Frank R. Jackson. Mr. Doolittle was recently general manager of the Sunderman Carburetor Corporation and was for several years sales manager for the Zenith Carburetor Co. Mr. Jackson was formerly associated with the Zenith company.

Statement is made that the Claudel carburetor is one of the oldest plain tube carburetors invented in Europe, having been used extensively in power vehicles and automotive apparatus utilized for military purposes. It was patented in 1902, but is now to be sold in this country for the first time. The manufacturer is said to control basic patents on many of the plain tube principles of design and construction incorporated in carburetors, and Claudel carburetors are claimed to afford high power efficiency with maximum economy with heavy fuels. The purpose of the agent is to insure prompt deliveries and intensive service both to manufacturers and users.

The National Good Roads Convention will be held in Quebec, Canada, May 20, 21 and 22.

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SELDEN "SPECIAL" 1½-TON TRUCK

THE Selden Truck Sales Co., Rochester, N. Y., has recently designed and is now building a new truck, 1½-ton chassis, which will be known as "The Selden Special.' This vehicle will replace the one-ton worm driven, model TWL, the Selden company discontinuing the manufacture of this size chassis.

By analysis of the design it will be seen that the various elements which comprise the truck are of sufficient proportions to assure endurance. The springs are extra long and the rear set is fitted with auxiliary coil springs which seat against the frame when the truck is loaded and absorb road shocks.

The mud guards of the front wheels are supported with bars of a large section, to prevent vibration when the vehicle is in motion. All the spring pins, steering knuckles and other oscillating parts are provided with large grease cups. The drive shaft is approximately horizontal and after a load has been placed on the truck a straight line drive will be obtained.

Engine a Continental "Red Seal."

The engine is a Continental "Red Seal" model N, four-cylinder, water cooled, four-cycle, L head type, having a cylinder bore of 3¾ inches and a stroke of five inches. The horsepower according to the S. A. E. rating is 22.5 and the maximum speed is 1200 revolutions a minute, controlled by a governor. The cylinders are cast en bloc with the water jackets integral, with the head of the jacket open, from a special grade of gray iron. With this construction the water chambers are uniform as to wall thickness and the passages are free and insure a thorough circulation of water. The jacket head carries a large water outlet manifold located centrally so that there is a rapid flow of water across the combustion heads of the cylinders. The head is fastened to the cylinder block with a series of cap screws.

The cylinders after being rough bored are set aside for a time to "age," this process eliminating distortion due to machining strains.

The crankcase is made in two sections, and all the bearings are carried in the upper section, being easily accessible by removing the lower part or oil pan. The upper section of the crank case has forward and rear extensions, the former with a cover housing the timing gearset, and the latter with a cast aluminum lower section houses the flywheel. The rear support arms of the engine are cast integral with the upper half of the crankcase, the power plant being designed for three-point suspension.

The pistons are cast from the same grade of metal as that used for the cylinders and are fitted with three diagonally split concentric expansion rings. These rings are machined by a special process to remove all strains.

Details of Power Plant.

The crankshaft is a three-journal type, drop forged from special steel with the flywheel flange and thrust flanges at either side of the center main journal integral. The shaft is heat treated to give a tensile strength of 90,000 pounds per square inch, and afterwards the various journals are carefully ground to size. The front bearing is 2 3/16 inches diameter and 2⅞ inches long, the center bearing 2 7/16 inches diameter and 2½ inches long, the rear 2¼ inches diameter and three inches long. The bearings are made of high grade nickel babbitt held in bronze cages. The connecting rods are made of .35 carbon steel, drop forged and heat treated. The bearings at the crank end is 1⅞ inches diameter and 2 3/16 inches long, and for the wristpin 1 3/32 inches diameter and 1½ inches long. The wristpins are hardened steel tube, seated and locked in the piston bosses. The valves have nickel steel heads electrically welded to carbon steel stems and are interchangeable. The seats and stems are accurately ground to size, the diameter of the valves being 1 11/16 inches.

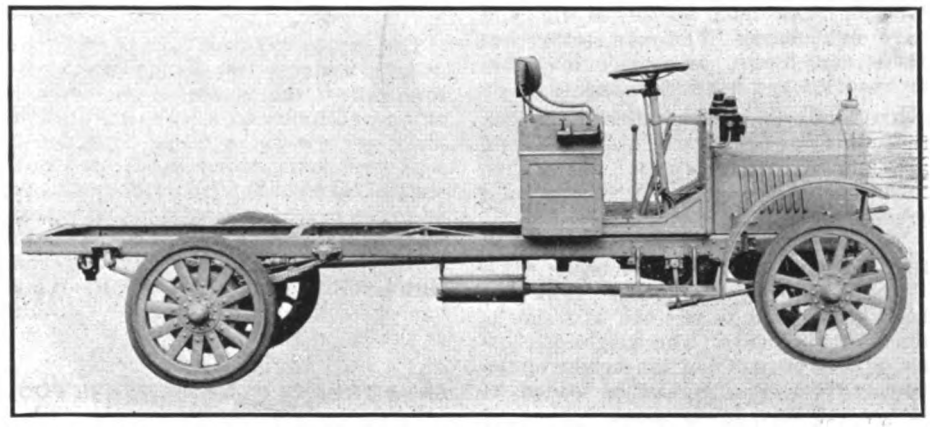
The camshaft is a carbon steel drop forging with the cams integral, which is annealed and heat treated and case hardened. The shaft is mounted in white bronze bearings and is lubricated by the oil that collects in the oil pockets, which are cast in the crankcase for this purpose. The dimensions of the journals of the shaft are: Front, 2 19/32 inches diameter and 1½ inches long; center, 2⅜ inches diameter and 1⅝ inches long and rear 1½ inches diameter and 1¾ inches long.

The timing gears are helically cut and are practically noiseless when in operation. The gearset consists of crankshaft, camshaft and pumpshaft gears. The valve tappets are a mushroom type, ground to size and are fitted with adjusting screws and locking nuts. The tappets operate in renewable guides. The valve mechanism is enclosed by two coverplates that are retained by nuts screwed onto studs.

Lubricating and Cooling System.

The lubrication system is a combination force feed and splash, the oil being drawn from a screened well in the reservoir by a horizontal pump driven by an eccentric from the camshaft and forced through copper tubes to the timing gears and over the rear main bearing. The excess oil drains to the base of the crank chamber and is then distributed by splash to the center and front main bearings, the cylinders and pistons, wristpins, cams and valve tappets. The drainage from the crankcase returns to the oil reservoir. The oil pump and the sump screen can be quickly removed for cleaning and the reservoir may be drained and flushed. By removing the lower section of the crankcase access is afforded to the main bearings and the connecting rod bearings.

The engine is equipped with a Selden-Stromberg carburetor, having an automatic float feed, the mixture being controlled by bleeding the gasoline passage. The instrument is provided with a special by-pass arrangement for idling speed. The speed of the engine is controlled with a Pierce centrifugal type of governor. The ignition is by means of a high-tension magneto with set spark. The gasoline tank is located under the seat and has a capacity for 20 gallons. The engine is cooled by a thermo-syphon circulation of water through the cylinders and a radiator of the built up type made of vertical tubes with cast metal tanks and removable core. The radiator is mounted on ball trunnions, thus eliminating all strains due to the chassis frame weaving and road shocks. Radiation is insured by a four-blade fan, 16 inches diameter, mounted on annular ball bearings on an adjustable bracket on the forward end of the cylinder block that is driven by a belt from a pulley on the forward extension of the camshaft.



Side View of the Selden "Special" 1½-Ton Truck Chassis, Which Replaces the One-Ton Worm Driven Machine.

Power Transmission System.

The clutch is a Brown-Lipe-Selden improved type, dry plate, multiple disc, with Raybestos facing, assembled with a Brown-Lipe-Selden selective sliding gear transmission gearset having three speeds forward and reverse. The power is transmitted by a specially designed tubular shaft with a Spicer-Selden universal joint at each end to the rear axle. The bearings in the transmission gearset case are Timken taper roller. The gears are made from alloy steel having ¾-inch faces. The gear reduction in the transmission gearset is: First, 3.33 to one; second, 1.68 to one, and third, direct and

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reverse, 4.35 to one. The gear reduction in the rear axle is seven to one, which gives a total gear reduction, engine to rear wheels, of first, 23.3 to one; second, 11.76 to one; third, seven to one, and reverse, 30.45 to one. The speed of the truck is 18 miles an hour on high.

The front axle is a steel I section drop forging, heat treated, the spindles of which are fitted with taper roller bearings; the steering knuckles and pins are made from special alloy steel and are heat treated. The rear axle is a Timken-David Brown worm drive, gear ratio seven to one. The drive shafts are made from an alloy steel, heat treated and are fitted with Timken taper roller bearings.

The chassis frame is made from pressed steel, .20 to .30 carbon, and is a channel section 4 9/16 inches deep and 3½ inches wide, the steel being 7/32 inch thick. The gear shift and emergency brake levers are located centrally and within easy reach of the operator. The clutch and service brake pedals are located conveniently for operating by the feet. The steering gear is of the worm and nut type, irreversible, with an 18-inch steering wheel.

The front springs are semi-elliptic type, 40 inches long, 2¼ inches wide and have eight leaves. The rear springs are also semi-elliptic, 50 inches long, 2½ inches wide and have 10 leaves.

Artillery type wooden wheels are used, those in front being 34 by 3½ inches single, and the rear wheels 34 by five inches single, and the tires are solid pressed on type.

The truck has a turning radius of 23 feet and wheelbase of 140 inches.

The length of the vehicle from the back of the seat to the end of frame is nine feet six inches. The weight of chassis is 3400 pounds and the height of the frame from the ground is loaded 34 inches and unloaded 37 inches.

The standard equipment includes the driver's seat, cushion, two oil side lamps, one oil tail lamp, mechanical horn, kit of tools and jack.

TRAFFIC MOTOR TRUCK SALES CONVENTION.

A sales convention of the Traffic Motor Truck Corporation was concluded May 10 that was attended by agents and dealers from all sections of the United States and Canada, and is stated to have resulted in a very large development of the corporation's sales organization. The convention was in connection with the occupancy of a new plant at 5200 North Broadway that has production capacity of 50 trucks a day. The site is adequate for very large expansion and the buildings are new and have been equipped with facilities for economic production. The company was organized less than two years ago.

The first day was given over to sightseeing trucks, inspection of the plant and its equipment, a buffet luncheon at the factory and description of the mechanical qualities of traffic trucks. In the evening a dinner was given at the Statler Hotel, at which addresses were made by Guy W. Wilson, president of the traffic corporation; United States Senator Selden P. Spencer, T. C. Brandle, vice president of the traffic corporation; H. H. Hawkes, general sales manager; Breckenridge Jones, president of the Mississippi Valley Trust Co.; Paul Hilken, president of the Traffic Truck Sales Co., Philadelphia, and William D'Arcy, president of the Associated Advertising Clubs of the World.

The second day from 9 to 12 was given over to business transactions at the factory, where the visitors were taken in autos, and following a luncheon the company saw a two-ton traffic truck loaded with 6000 pounds climb a 45-degree ramp used to take chassis from the first to the second story of the plant. The chassis was chosen at random and was freighted with granite blocks. The start was made with a rolling start and was without mishap. The convention closed with a "frolic" at the Hotel Jefferson.

SAYS TRUCKS HELP INCREASE FOOD SUPPLY.

The motor truck has not only increased our transportation facilities at a most critical period in our national history, but its rapid increase in numbers has materially increased the nation's food supply, as M. L. Pulcher, general manager of the Federal Motor Truck Co., Detroit, points out.

Five acres of cultivated land are required to feed a horse every year, while for each good healthy man only three acres are needed, a fact which has loomed big in our national economy since the problem of feeding ourselves and the world has faced Uncle Sam.

Every business man depending on horses for haulage, is, in this sense, preventing so much land from being used to feed the nation, including the millions of Americans still in military service.

A truck will release several horses, thus considerably increasing the food supply. There are thousands of cases similar to that of Sterchi Bros.' Furniture Co., Chattanooga, which put a 1½-ton Federal truck to work on haulage and delivery and soon found that the truck, with driver and helper, could easily do the work of three teams and much more speedily and satisfactorily.

Thus there has been released 30 acres required to feed six horses—enough land to feed 10 soldiers and the company has experienced a big saving in actual cash, according to a letter received by Mr. Pulcher. So successful was the first that the company now has three Federals in operation.

The Harrisburg Railway Co., Harrisburg, Pa., formerly hauled coal to and ashes from their power plant by a car operated by power from the trolley system. Three men were required to operate this equipment and even then it was difficult to dispose of the ashes along the line.

Not long ago, a 3½-ton Federal with power dump body was put into service and now D. B. Moist, engineer, reports that one man handles the work easily.

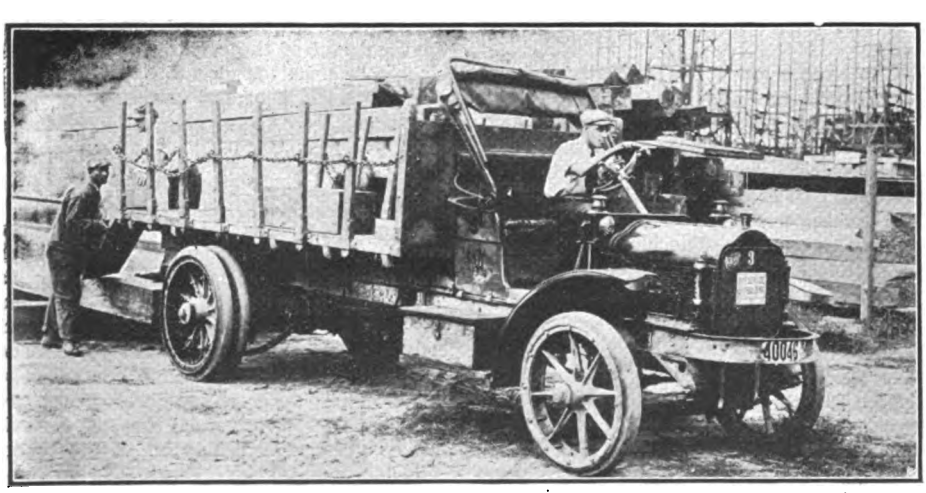
"Just at this time the elimination of the extra car on our system means some saving of coal as well as labor," he says. "Another advantage is that the truck is more flexible than the car and enables us to dispose of the ashes at the nearest dump, while with the car we could dispose of the ashes only at such places as were reached by the track."

SAVING WITH FLUSHERS MOUNTED ON MOTOR TRUCKS.

Andrew F. Macallum, commissioner of works, Ottawa, Ont., in his annual report states that with two power flushers mounted on motor trucks 18 miles of streets of various widths have been thoroughly washed each day at a cost of $1.72 per mile. These flushers replaced 20 of the old horse drawn sprinkling wagons. The trucks operated for 150 days at a cost of $4650. If this work had been done by horses it would have cost $16,800, a saving of $12,150. A Federal truck flusher has just been added, which will replace 10 more of the horse drawn outfits.

NEW SANFORD TRUCK AGENCIES.

The Sanford Motor Truck Co., Syracuse, N. Y., has made agency contracts with the following concerns: C. L. Kerr, Geneva, N. Y.; H. H. McCornick, Binghamton, N. Y.; James Pritchard & Sons, Ithaca, N. Y., and William Penn Auto Co., Altoona, Pa.



White Five-Ton Heavy Duty Truck, Used for Lumber Haulage by the Virginia Shipbuilding Corp., Alexandria, Va.

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McNAMARA NOW DISTRICT SALES MANAGER.

Edward McNamara has been appointed district sales manager of New York state and the New England states for the Atterbury Motor Car Co., Buffalo, N. Y.,



Edward McNamara, New England District Sales Manager, Atterbury Motor Car Co.

builder of Atterbury trucks. Prior to this he was district sales manager for New York and Pennsylvania with the same company, from Jan. 1, 1917 to Jan. 1, 1918. Mr. McNamara has had a varied experience with automobiles and motor trucks, his first connection being as designer, which work he engaged in for three years. He was next actively engaged in motor truck transportation for four years, operating a fleet of from seven to 10 trucks in short and long distance hauling and, further, he has been a careful student of motor trucks transportation for the last seven years. His first connection with the Atterbury company was handling the Buffalo city sales, which position he held for three years.

CONTROL OF NORMA PURCHASED BY NONES.

W. M. Nones, president and general manager of the Norma Co. of America, has acquired full control of that company through the purchase of 1950 shares of formerly enemy owned stock. The sale was conducted by Alien Property Custodian on May 3 and brought $500,000.

Mr. Nones organized the company in 1911 and has always held its executive management, the foreign stock holdings dating back to the development abroad of patent rights in which the business to some extent had its origin. With the acquisition of full control Nones now has plans for the development of the company in the further manufacturing and marketing of Norma precision ball bearing products.

The Wolverine Forged Drill Co., Ypsilanti, Mich., to manufacture high speed twist drills, has been incorporated with capital of $500,000.

Wisconsin Parts Co. Acquires Hayes Corp. Plant

Wisconsin axles, now standard equipment on many well known high grade trucks, are to be custom manufactured on a much more extensive scale by the Wisconsin Parts Co., a new corporation, which has purchased the assets of the E. B. Hayes Machinery Corporation, Oshkosh, Wis.

The Wisconsin Parts Co., organized under the laws of that state, has a capital stock of $500,000, of which $300,000 is in preferred and $200,000 in common stock. It already has orders on its books for more than a million dollars worth of business.

Heading the corporation as president and general manager is W. F. Rockwell, one of the best known engineers and manufacturers in the automotive indus-



W. F. Rockwell, President and Manager, Wisconsin Parts Co., Oshkosh, Wis.

try. He was formerly vice president, in charge of engineering and production, of the Torbensen Axle Co. of Cleveland, O., and recently resigned that connection to take charge of the new corporation. Louis Schriber, vice president of the Old National Bank of Oshkosh, is treasurer.

The Wisconsin Parts Co. will continue the manufacture of Wisconsin worm drive axles for trucks of from one to five tons capacity. In addition a tractor axle has been designed and is now in process of manufacture.

It is the announced policy of the company to build none but high grade products and to make these products to specification to meet the specific needs of the truck and tractor manufacturers with whom it will do business. In other words, the products of the new company are to be what is known as custom built.

The factory taken over by the new company is thoroughly modern in every respect and includes a foundry and an especially fine heating plant. Its machine equipment is thoroughly up to the minute. There is plenty of land in the factory site to provide for future expansion and the plant is served by excellent railroad facilities.

It has a present capacity of 500 axles a month and additions in plant and machine equipment now being made will double this capacity in the near future.

More than 3500 Wisconsin worm drive axles have been produced during the last two years and are giving excellent service under high grade trucks.

An example of the quality of the Wisconsin worm drive axle is the fact that more than 1000 were supplied to the British government for use in war trucks.

PIERCE-ARROW PROFITS.

The operating profit of the Pierce-Arrow Motor Car Co. of Buffalo for the three months ending March 31, is estimated at $946,438. The net profit less provision for depreciation of plant, equipment and all taxes was listed at $567,884.

S. R. SWISS JOINS REPUBLIC TRUCK COMPANY.

The Republic Motor Truck Co. of Alma, Mich., has appointed S. R. Swiss as advertising manager. Mr. Swiss has had a long and excellent advertising experience. For 11 years he directed the sales and advertising of Red Raven Splits. He was one of the pioneers of this concern, having associated himself with the Red Raven company in its early days and a large portion of this concern's success can be traced to his efforts.

Following that he entered the motor truck industry, which work he has been engaged in several years. He has a thorough and sound knowledge of motor truck conditions from both a manufacturer's and retailer's standpoint. He has



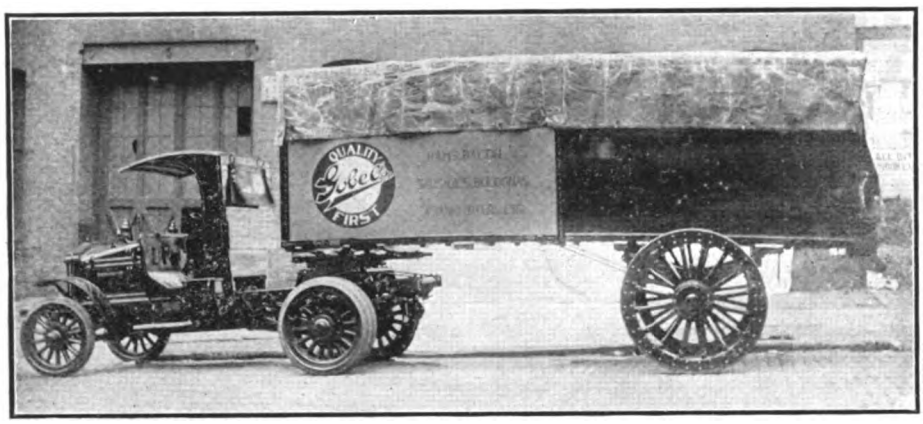
S. R. Swiss, Advertising Manager, Republic Motor Truck Co., Alma, Mich.

been associated with the Gramm-Bernstein and Day-Elder motor truck companies. Mr. Swiss will make his headquarters at the Republic's executive home office at Alma, Mich.

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SEMI-TRAILER HAULAGE ECONOMY

Unit of 12 Tons Capacity Operated by Adolf Gobel, Inc., Meat Packer, Hauls Same Tonnage as Three Five-Ton Trucks



Semi-Trailer 20 Feet Long, 68 Inches Wide and 132 Inches Height, with Pierce-Arrow Tractor, Built for Adolf Gobel, Inc., New York City, for Meat Haulage.

UNUSUALLY illuminating is the experience of Adolf Gobel, Inc., a concern operating a packing house at Morgan avenue and Rock street, Astoria, New York City, that has remarkably developed business through the use of power vehicle equipment, and which has utilized methods for economizing their time that are intensely practical. The plant is seemingly remote from what might be regarded as the most advantageous locality for both production and distribution, but it covers the greater part of a city block where years ago Adolf Gobel began manufacture of food products in a tiny shop, and as the business increased in proportions he did not move where products could be received and shipped direct by rail or water, or both. In other words, instead of being in the center of the zone in which the greater part of the products are sold the plant is approximately nine miles from Times square by the most direct traveled way that is practical for vehicles.

The plant produces very largely what is known as delicatessen, food that is supplied to stores ready to serve on the table, and the products are distributed daily throughout a very large part of the Metropolitan district. For years the business was limited to those sections of New York that could be reached with animal vehicles. One means of increasing the mileage that was possible with horses was to use relays, driving from the plant to Manhattan, changing the animals and using the relay for delivery in that section of the city, and again changing and driving from Manhattan to the plant with the horses first used.

Has Used Trucks 10 Years.

In 1909, or 10 years ago, the first power vehicles were purchased, and these were used for delivery at distances that could not be reached by horse wagons and very satisfactory increase of business was developed. The equipment was added to, both gasoline and electric machines being acquired, and these were types that had capacity of approximately 3000 pounds. The operating plan generally was to use horse wagons for work with a six-mile radius, electric machines for work within a 12-mile radius and gasoline vehicles outside of the electric zone.

While there was much to be desired so far as power wagons were concerned, there was obviously a very large measure of economy of time obtained with them, and this had a definite value. Not only this, with them the use of horse relays was obviated. The conclusion of Mr. Gobel was that the power vehicle was practical and there was quite as much need of developing organization and system of operating as there was for mechanical improvement by the manufacturers.

Truck Distribution Increases Business.

The growth of the Gobel plant and of the business as a whole has been very rapid since the use of power vehicles was begun. The works is operated almost constantly from 3 o'clock Monday morning until Saturday noon of each week, there being day and night shifts. The products are sold from Boston to Baltimore and as far West as Buffalo, so that shipments are made by rail and vessel, though principally by express outside of the area served by vehicles.

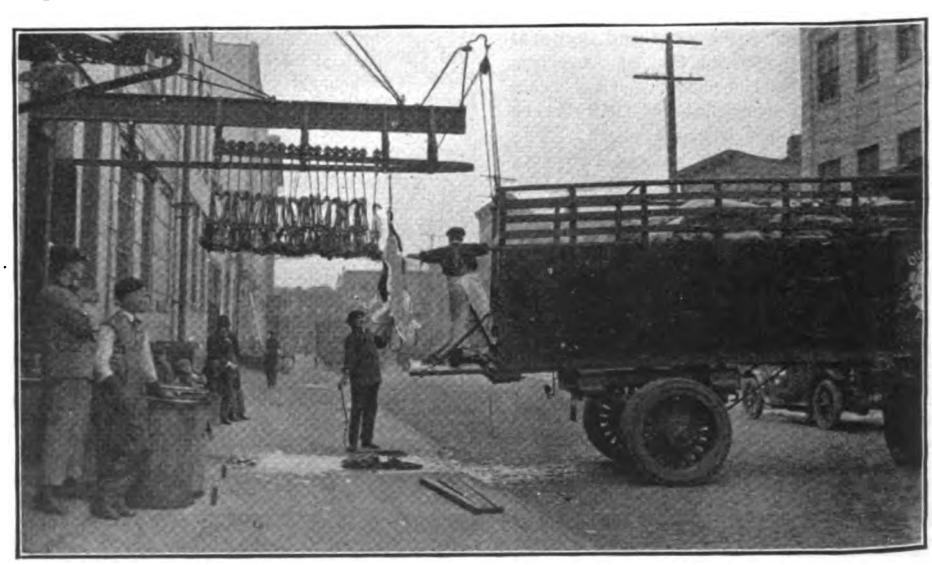
In addition to the machines owned by the company more than 25 men operate independently, either selling on commission on routes they have developed or buying at wholesale and selling to customers whom they serve regularly. Some of these salesmen use horse wagons and others use power vehicles, the type of equipment depending very largely on the mileages of the routes. Of course the routes that are longest are in sections more or less remote from the plant, where there is less competition, but everything is dependent upon regular deliveries.

One of the greatest obstacles to the economical use of power vehicles is the time required for loading. Beginning at 3 o'clock week day mornings and continuing until about 7 o'clock, Rock avenue close to the plant is lined with trucks and wagons. As something like 30 different products are carried by each of the route vehicles, and these must be selected with reference to quality and weighed and packed, considerable time is necessary.

Loading at Plant Requires Time.

All salesmen are charged with the stock taken out and they are credited with what is returned, so to protect the interests of the company and the salesmen accurate record must be kept. The salesmen pick out the products they want in baskets and the weighing is done on a battery of five scales, but despite careful organization and every provision to obviate delays from one to two hours a vehicle is required for this work.

The salesmen and the regular route vehicles that have the longest distances to cover are given precedence in loading, which is the only preference that can



Unloading the Big Semi-Trailer at the Gobel Plant in Rock Street, Using a Block Tackle and an Overhead Trolley Having Gravity Descent to the Weighing Room.

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consistently be given. The company's machines are not so much delayed as are those of the salesmen, because the orders can be made up for them and the principal work of the driver is to so arrange the loads that the deliveries can be made without rehandling the freight.

By 8 o'clock each morning Rock street is well cleared and from that time on shipments are made and meats are brought in large quantities. These are received in varying forms. No slaughtering is done at the Gobel plant, and for obvious reasons slaughter houses are removed so far as is practically possible from both manufacturing and residential sections of the city. In fact, the greater part of all meats packed and prepared at the works are shipped from other cities and usually in barrels or cases or wrapped. These are both freight and express shipments, sometimes by rail and occasionally by water, and during a part of the year at least either iced or chilled. These meats must be hauled from the terminals where received and delivered at the plant, and all must be weighed as received and the bills of lading or shipping receipts checked. This weighing is done on the battery of scales used for loading the distribution wagons and a considerable tonnage can be handled in a comparatively short time.

Weighing All Receipts Necessary.

A large part of these plant deliveries are made by the firms or agents from whom the meats are purchased and power trucks are generally used for the work. Though the receiving and shipping is through one department, because of the organization and system there is rarely congestion. The arrangement of the scales is in a line with partitions about four feet high between them. There is a passage on one side of the scales and on the other side is the large "weighing room.' A heavy grating door is at the end of the passage and on the ends of the scale partitions are gratings so that one can pass when these are locked without observation from the office of the shipping room.

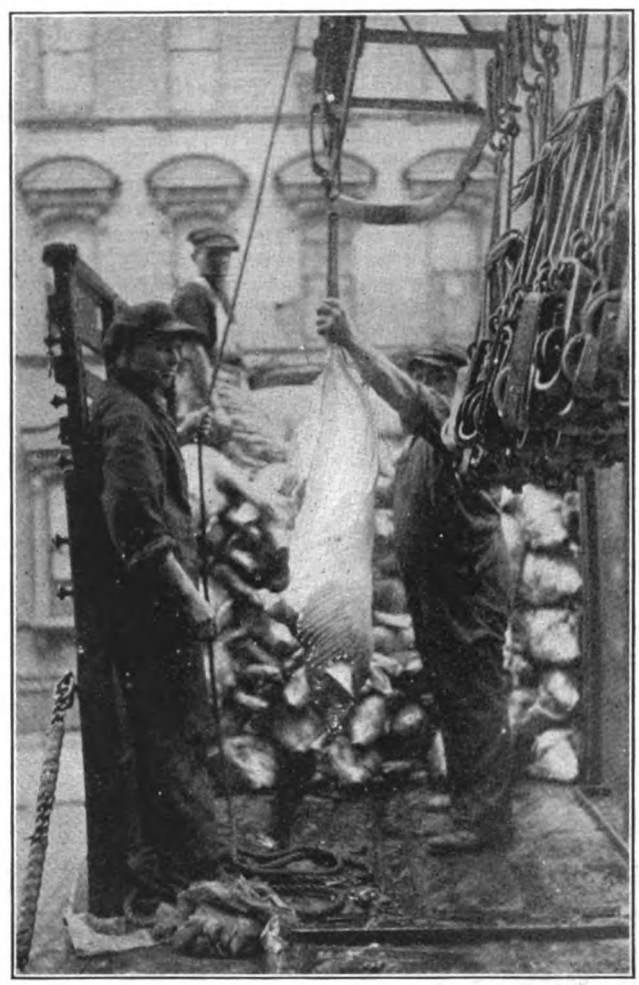
The scales can be used as desired and this means that with two or more checkers and three weighers a load can be handled very quickly, especially if the packages are large. All meats are removed from cases or barrels or wrappings so that net weight is obtained. When the meats are entire carcasses or quarters or large size these are handled differently. A trolley rail, so-called, extends from the passage into the weighing room to the edge of the curbing, being suspended from the wall outside of the building, and on this a considerable number of trolley hooks are used. These have a single wheel at the upper ends with a hooked rod extending downward on which the meats can be hooked. The rail is sufficiently inclined so that the trolley hook and its load will be carried by gravity into the weighing room. The trolley hooks are unloaded and taken from the rail. They are grouped and run to the outer end of the rail and kept at the curved dead end. As needed they are placed on the rail and loaded. Because of the system of weighing and receiving and shipping and the need of economizing the time of the trucks, so far as possible the receiving is scheduled, but despite this there are times when machines will be delayed more or less.

Special Equipment for Meat Haulage.

One of the sources of meat supply is a slaughter house in 40th street, near the North river in Manhattan, where hogs are butchered, and the carcasses are hauled from there to the Gobel works. The most direct route is across the Queensboro bridge and the distance is approximately 7½ miles. The haulage of meats from this source was a problem that was given a great deal of attention before an equipment was decided on, and trucks were rejected in favor of the larger capacity and seemingly greater economy of a trailer.

What was wanted was what would carry at least double the load of the five-ton truck, which would reduce the mileage at least a half, and with the loading done rapidly at the Manhattan slaughter house, and with the facilities for unloading at the plant, there was reason to expect a considerable economy.

Other considerations were that no greater crew would be required for the trailer, and there would be a saving in labor in loading a large capacity body once as compared with loading a five-ton truck twice. A five-ton Pierce-Arrow truck was bought for use as a tractor and a special body was designed and constructed by the Shadbolt Manufacturing Co., a well known body specialist of Brooklyn. The truck chassis was ordered with a short wheelbase. The body is a semi-trailer type, having a capacity of 12 tons of meats as packed for haulage. It is 20 feet long, 68 inches wide and the height is 132 inches when mounted on the tractor chassis. The body is constructed with box or express type sides, with a tailgate the full height, and it is designed to be covered with a tarpaulin to protect the load from storm, sun or dust.



Interior of the Semi-Trailer at the Unloading Plant, Showing the Hog Carcasses and the Equipment for Handling Them Close-Up.

Heavy Load for Rubber Tires.

The wheels are mounted on a dead axle and the body is on heavy semi-elliptic springs. When built the intention was to use steel tires and to move at comparatively slow speeds, but when in service, despite the spring suspension of the body, there was belief that the heavy load would be quickly destructive and large rubber tires were substituted. These were found to afford excellent satisfaction and practically obviated all results that were experienced with the steel tires. In fact, there was surprisingly little vibration communicated to the chassis and driven at six or more miles an hour every requirement was met.

On smooth surfaces or earth or macadam roads the steel tires would probably have been satisfactory, but practically all of the work done with the semi-trailer is on cobble or block paving, and as maintenance economy was essential the use of rubber tires was believed best, despite the far greater cost and the positive wear under heavy freights.

The tractor and semi-trailer are usually used at night for meat haulage for several reasons. One is that the streets are not congested with traffic and the outfit can be driven faster and easier. Another is that the temperature is cooler, which is an important factor when one realizes that the carcasses are not iced and there is less shrinkage. Another is that there is less dust, and a fourth is that there will be no reason for delay either loading or unloading.

Much Haulage at Night.

The trip between the slaughter house and the Gobel works is made in an average of one hour and 45 minutes, which is very satisfactory time for the distance when the traffic conditions are consid-

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ered. According to the driver the trailer is not unwieldy and that it can be handled with ease, even where there is vehicular congestion. Two trips are often made at night, which necessitates approximately 30 miles, and the two loads will frequently exceed 25 tons. Besides this work the tractor and trailer are used during the day for delivering lard and other products that are handled in large volume. In day work the size of the unit is not objectionable, either from the viewpoint of the driver or of other drivers or vehicle owners, and according to the Gobel company the outfit has been satisfactory from the viewpoint of operation.

Considering economy, however, the tractor and trailer are compared with three trucks, for claim is made that the driver and helper can do with it as much work as can be done with three machines, and statement is made that the cost is not more than the expense of a single truck. This conclusion is not made hastily, but after the outfit has been driven more than 16,000 miles, and the cost has seemingly been well established. While there is no question that the first year or two of service a truck or tractor will cost less than the succeeding period of time, it is also fairly certain that with careful upkeep any machine will be serviceable for a much longer period than the generally accepted service life—about five years or 100,000 miles of driving.

The statement of the Gobel company is substantiated by figures that have been carefully compiled and are maintained to include every factor that should enter into compution of operating cost. The outfit is used carefully, a fact that is evident by there being no tire replacements, despite the mileage stated, and the original tires still have some service value. This may be held to be remarkable.

According to the company the work done varies but little and that of any month may be accepted as typical. The following tabulation is from the record for February, a short month, including a holiday, which is maintained to be representative:

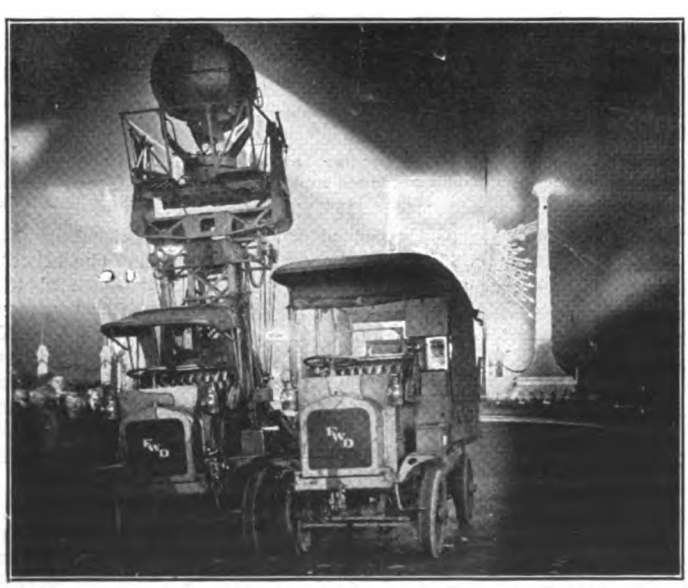
Cost of tractor and semi-trailer	$6,387.20
Operating charges—	
Gasoline, 252 gallons, 23½ cents	$59.22
Oil, grease and kerosene	2.18
Driver, 22 days, $4.67	102.74
Mechanic	16 25
Tire allowance, 626 miles at $.05	12.52
Repairs for month, plus 1/12 of January repair	11.91
Garage (pro rata)	15.00
Total	$219.82
Fixed charges—	
Insurance ($181 a year)	$15.08
Interest, six per cent	21.94
Depreciation at 20 per cent	89.07
Total tax and license ($80 a year)	6.67
Total	$142.76
Grand total	$362.58
Record of work—	
Days operated	22
Total miles driven	626
Total trips made	41
Total tons hauled	502
Cost recapitulation—	
Cost a day operated	$16.48
Cost a mile operated	.58
Cost a ton mile	.004

The record also includes the fact that the average mileage was 28.4 a day for the month, and the average trip was 15.2 miles. The average tonnage hauled was 12.24 tons a trip.

The Gobel company operates its own garage and maintains its power vehicles, having a charging panel for the electric machines. The company has done its own work for about seven years and it has facilities and equipment for practically any repair. The maintenance is systematically done and the machines are exceedingly well kept.

BATTLEFIELD SEARCHLIGHTS BOOM NOTE DRIVE.

In Chicago during the recent drive for the sale of Victory Liberty Notes in one of the large public places was erected what was designated a "Jeweled Altar of Victory," which towered to a height of 110 feet and was intended as a temporary reminder of the part taken by the nation in the world war and to emphasize the need of public investment in Victory Notes. This was conspicuous during the day, and to attract and concentrate public interest to the need of the subscription at night an army field searchlight was located where it flooded the "altar" with light.



Army Field Searchlight Illuminating "Jeweled Altar of Victory" at Chicago During Liberty Note Campaign.

The accompanying illustration is from a photograph made at night. The light illuminated the "altar" so that it was even more spectacular than by day. The searchlight consists of two units, the one being a powerful generator and the other a large searchlight mounted on an elevating tower that can be raised to a height of 35 feet. The range of the searchlight is 20 miles, and the rays can be projected in any direction, the searchlight itself being movable within 600 yards, the current being supplied by a cable that is carried on a power operated reel at the rear end of the truck carrying the generator.

Both of the trucks seen in the illustration are F-W-D units, of the type built for the army, and one can discern on the machines the camouflage that was applied to make them invisible save within comparatively short distances.

COAL AND ICE DELIVERED IN ELECTRIC TRUCKS.

In Boston, Chicago, New York and elsewhere electric trucks are employed extensively in the movement of coal from the yards to consumers.

"A study of comparative operating costs indicate that coal is moved at a lower cost per ton-mile by electric trucks in the cities than by any other form of transportation," says A. Jackson Marshall, secretary of the Electric Vehicle Section of the National Electric Light Association.

"This fact is being realized by many large coal companies and, as a result, there are some far-reaching developments contemplated in the further application of electric trucks to this particular class of business, which will be reviewed in detail in subsequent articles.

"Electric trucks, by virtue of their successful operation, have won for themselves the high esteem of representative manufacturers of and dealers in ice. The Consumers company of Chicago, Ill., employing 26 electric vehicles, may be taken as indicative of the introduction of electric transportation into the ice business. Owing to the mildness of last winter there will be a great scarcity of ice this summer and consequently prices of this very necessary commodity will probably reach new heights.

"Those companies using electric trucks will be conducting the distribution phase of their business—probably its most costly feature—at minimum expense possible, besides will be assured of uninterrupted service from their electric transportation units, blest with but extremely few moving parts and very simple control."

UNCLE SAM TRACTOR PLANT IS EQUIPPED.

The Uncle Sam tractor, a 20-30 type, designed by G. D. Harris, Chicago, will be made by the United States Tractor and Machinery Co., which is equipping the Strange building, Menasha, Wis., for a machine shop and assembling plant. Work is now being done on the construction of the first unit of the permanent factory. The company has $250,000 capitalization. H. C. Berry, formerly chief engineer of the United States Tractor Co., Chicago, which has been taken over by the new concern, is chief engineer of the new company.

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SKF INDUSTRIES, INC., PLAN FOR OPERATING.

Statement is made by the SKF Industries, Inc., that a misconception of its operating plan led to an announcement that there would be a physical consolidation of the several concerns which have united under the trade title for sales and distribution. The main object of the companies is to obtain unity in holding, sales and engineering.

This reorganization, which became effective May 1, comprehends the sale of the products of the Hess-Bright Manufacturing Co., the SKF Ball Bearing Co., the Atlas Ball Co. and the Hubbard Machine Co. through one central organization. The new company, under the name of the SKF Industries, Inc., will market a complete series of ball bearings, including the Hess-Bright deep groove type, the SKF self-aligning radial and thrust bearings and ball bearing pillow blocks and shaft hangers.

Through its engineering organization, with a well equipped laboratory, the new company will have available for users of ball bearings the knowledge obtained in many years study of anti-friction bearings of all kinds. At request the needs of manufacturers will be analyzed and recommendations will be made, independent of sales considerations, of the bearings that will be best suited to conditions. The laboratory will carry on research studies with reference to anti-friction bearing design and application.

The new company, which will be under the direction of President B. G. Prytz, Vice President W. L. Batt, Comptroller J. P. Walsh and Sales Manager S. B. Taylor, will have its principal office at 165 Broadway, New York City, and branches at Boston, Philadelphia, Atlanta, Buffalo, Cleveland, Detroit, Cincinnati, Chicago and San Francisco.

DEATH OF FREDERICK ROBINSON.

Frederick Robinson, director and former vice president of the J. I. Case T. M. Co., passed away April 22, at his home in Racine, Wis. Mr. Robinson came to Racine when young from Kenosha, where he was born less than 58 years ago, and was connected first with the old National Vehicle Co.

After a period spent in the structural iron industry in Colorado he returned to Racine as purchasing agent for the Case company. He was one of the group which bought up this company's stock in 1898, when he was elected vice president and general manager. He retired from this position in 1914, but continued active in the company's affairs.

LATEST ACASON TRUCK PRICES.

Statement is made by the Acason Motor Truck Co., Detroit, that the following list prices will apply to its chassis until further notice: One-ton, $2150; 1½-ton, $2650; two-ton, $3150; 3½-ton, $4150; five-ton, $5150; six-ton tractor, $3350; 10-ton tractor, $4750. These prices are f. o. b. Detroit.

Electric Industrial Haulage Units Big Economy

Builders of automobile cars and trucks wer among the first of the American manufacturers to adopt electric tractors and trucks, according to Shelby E. Race, sales manager of the Lansing Co., Lansing, Mich., pioneer builders of electric hauling units.

The first industrial tractors constructed by the Lansing company nearly 10 years ago were purchased by the Reo Motor Car Co. and are in use today, hauling tons and tons of freight daily, speeding up production work, lowering the cost of transporting materials to and from machines, saving man power, which was a most important consideration during the period when the company centralized its efforts in government work and was confronted with a serious labor shortage.

The Olds Motor Works of Lansing also has adopted Lansing tractors as a means of solving its inter-department transportation problem. In both the Reo and Olds factories Lansing tractor-trailer trains are frequently in operation 16 to 20 hours per day, and each unit is said to have relieved from five to 12 men for other work.

"While American manufacturers have been operating electric industrial units for a decade or more, it was not until the Germans began their drive on Belgium, nearly five years ago, that electric tractors and trucks were recognized as a solution to the problem of transporting package freight and other materials in warehouses, docks, aboard ships and from the boats on the other side," says Mr. Race.

"And I believe that one great benefit derived from the war has been the thorough demonstration of the practicality and efficiency of electric industrial trucks and tractors.

"During the war our Allies operated many industrial trucks and tractors on docks, in warehouses and terminals. So great was the saving in man power and time that our government adopted this means of transportation when the United States entered the war and it became imperative that package freight be moved quickly.

"Hundreds of industrial tractors and trucks have been put into service by the allied governments during the last three years and the saving in time and labor that has been effected has been sufficient to pay for each unit during the first few months service.

Life of Unit.

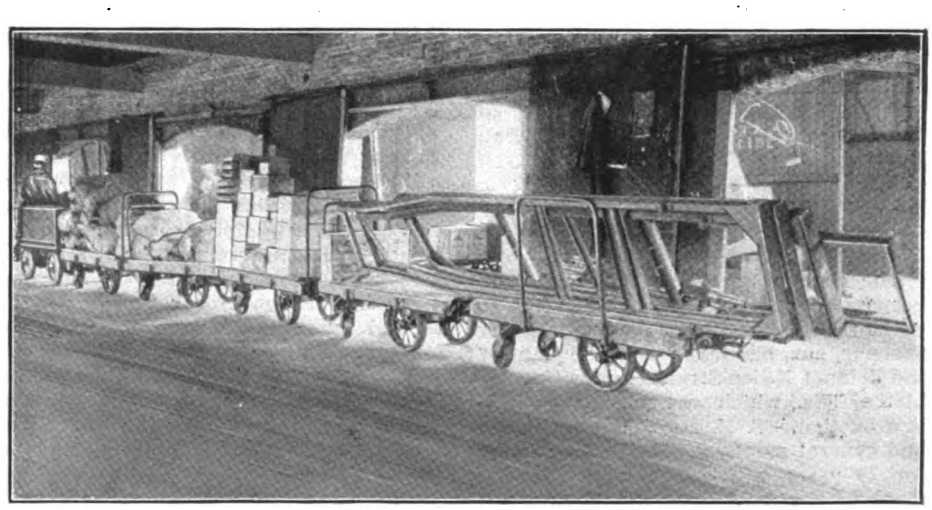
"It has been conclusively proven that the industrial tractor, with its train of trailers, covers by far a larger field of usefulness than the electric load carrying truck. The fact that the Allies, as well as our own government, used tractors almost exclusively, bears out our conclusion that probably 90 per cent. of all the work for which the electric industrial hauling unit is adapted can be best handled by the tractor-trailer system, rather than electric load carrying trucks.

"We figure that the life of a unit is 10 years. This estimate may be low because some of the first units to be built by our company apparently are just as dependable and efficient today as they were when first placed in operation.

"The life of a storage battery varies. Some makes will stand up four to six years while the life of others is two to three years. The cost of charging a storage battery depends upon its size, as well as the size of the transportation unit. The cost of charging the smaller size batteries is about 20 cents, while the cost of charging the larger batteries is practically 40 cents.

"A tractor can be operated, loaded under ordinary conditions, 20 to 25 miles before it is necessary to recharge the battery. However, over fairly level surfaces, a unit should run farther. The total upkeep cost per year, including charging cost, grease and oil, general repairs and one set of tires averages about $150."

A charter has been filed in New Jersey for the Nash Sales Corporation to deal in automobiles, etc., with $25,000 capitalization. The parties are D. J. Sargent and J. H. Gorman, Jersey City, and M. Jones, Maplewood.



Lansing Electric Industrial Tractor and Train of Five Loaded Trailers, a Type of Equipment Utilized for Inter-Factory Railroad Terminal and Dock Freight Handling.

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SAYS 350,000 TRUCKS WILL BE MADE IN 1919.

"The Pacific coast is the hardest section in the country in the severity of uses to which a motor truck is put," said R. E. Fulton, vice presidest of the International Motor Co., manufacturer of Mack trucks. Mr. Fulton has just returned to New York from an extended trip to the Pacific coast to study conditions in the West.

"For a number of years," Mr. Fulton said, "representatives and engineers of the International Motor Co. have recognized the Pacific coast as the testing ground for motor trucks. Consequently we have been building Mack trucks to best meet these conditions, knowing that if they made good out there they would make good in any part of the United States, or the world for that matter, with comparative ease. A poorly made truck cannot last long there.

"An indication of the success of the Mack in meeting these conditions is found in the constantly increasing sales of Mack trucks in the West. In Los Angeles, for example, since the signing of the armistice, the sales of Mack trucks have increased 500 per cent. over the corresponding period of the previous year. Throughout the United States the increased demand for Mack trucks makes it necessary to operate the two big plants of the International Motor Co. day and night."

Mr. Fulton said that it was estimated 350,000 trucks will be manufactured and marketed in the United States during the current year. Some of these trucks will prove their worth while others will fall by the wayside.

MOTOR TRUCK ASSOCIATION SERVICE TALKS.

The Motor Truck Association of America has inaugurated a series of talks on service by experts in connection with its monthly members' meeting, at which subjects of pertinent characters are presented by speakers and later discussed. The talks have been found especially interesting and have attracted large numbers of members.

At the meeting to take place at the club house of the Automobile Club of America, May 21, A. C. Russell, an expert connected with the Vacuum Oil Co., will speak on "Scientific Lubrication," and M. Norman Ball, sales engineer of the Norma company, will talk on "Ball Bearings, Their Use and Abuse."

HAYTON FIRM BUYS KILLEN-STRAIT PLANT.

The Hayton Pump and Blower Co., incorporated with $50,000 capitalization to manufacture centrifugal pumps, blower systems, etc., has taken over the plant of the defunct Killen-Strait Tractor Co., Appleton, Wis., which was sold at a receiver's auction. T. E. Hayton is president and general manager. E. D. Rasmussen, for 20 years with the pumping department of the Allis-Chalmers Manufacturing Co., is secretary and general superintendent.

SAE Summer Meeting at Ottawa Beach June 23-27

Plans are rapidly making for holding the summer meeting of the Society of Automotive Engineers at Ottawa Beach, Michigan, June 23 to 27. The meeting promises to be the best attended and most interesting in the history of the society. Reservations for the meeting are being received in large numbers at the offices of the society, 29 West 39th street, New York City, and it is expected that all available facilities at the summer resort chosen for the meeting will be sold prior to the opening date.

Ottawa Beach has been chosen because of the ideal facilities it affords for a meeting combining professional sessions with social features and recreation. One of the greatest advantages of the S. A. E. summer gathering is the opportunity for the engineers in the automotive industries to become better acquainted and to exchange ideas and information. The greater part of the week of June 23 will be given over to the meeting. All professional sessions will be held in the morning, with afternoons free for recreation and diversion. During the evenings there will be lectures or informal talks on scientific but semi-popular topics of interest not alone to engineers, but also to members of their families and guests.

Ottawa Beach is readily accessible from all automotive centers and is so located as to require a minimum of travel for a large percentage of the membership. It is separate from other points of attraction and thus an ideal place for the members to assemble in much the same way as they did in the very successful meetings held in the past on board ship on the Great Lakes. Many favored a lake trip this year, but the rapid growth of the society in recent years makes it impossible to secure any steamer affording sufficient accommodations for all who desire to attend.

Professional Features.

It is planned to have the meeting include papers on all important automotive subjects of the day which are of sufficient general interest to warrant their presentation at a meeting of the society. One subject which is to be discussed at length is the passenger car of the future. Many prominent engineers will contribute to this discussion, including one or more British engineers, who will attend the meeting. There will be a paper dealing with the relation of farm tractors to farm implements. Efforts are being made to secure a paper by a prominent authority on factory production methods. Aeronautic subjects will be treated by engineers who have made a long and intensive study of various phases of aeronautic work. A paper on engine cycles of the future is in contemplation, and it is possible that there will be papers on motorcycle design and on motor boat subjects.

Educational and Recreation Features.

Representative exhibits of automotive apparatus such as seaplanes and hydroplanes used for navy work and high speed motor boats used in the international cup race, may be arranged. The recreation features will include athletic contests of various character such as baseball games between sections of the society, tennis and golf tournaments, foot races and aquatic sports of every kind. Many of these events will be open to both men and women.

The social aspect of the meeting will include dancing each evening and a grand ball on the evening of Thursday, June 26. Special entertainment and social features will be arranged for ladies. The meeting promises to be one of great interest and profit to all who shall find it possible to attend.

SAYS AMERICAN TRUCKS ARE NEEDED IN EUROPE.

"There is a great demand for motor trucks," declares C. Lacroix, factory representative of the Acason Motor Truck Co. in France, in a letter to Vice President Harry Conlon of the Acason Motor Truck Co., reporting on the Lyon's fair, which he attended.

"Every truck man was busy at the Lyon's fair," Mr. Lacroix writes. "The interest in American made trucks was intense. The work of those American trucks that were sent over by the American government for war work caused more than curious interest.

"On my return to Paris I found our Belgium representatives sadly in need of trucks. The government of Belgium did not put any embargo on any imported goods from the outside and I urge that you let us have as large an allotment for Belgium as is consistent with your manufacturing plans.

"Trucks are needed in reconstruction work here in Europe. We need trucks that will give real service. From all reports Acason trucks have stood up exceptionally well and this information has become known quite generally over here. It is hard for us to have service places for trucks and, therefore, it is natural that trucks requiring minimum service attention will get the call. I have explained your careful manufacturing plans and this has won favor for us. But I urge you to give particular attention to getting trucks to us. We need them—in fact need them more than you do in America. We are trying to get back to normal commercially here and we must have trucks to do it with."

GARFORD TRUCK FIRST INTO GERMANY SAYS JOHNSON.

That "the Garford was the first truck to cross 'No Man's Land' into German territory after the signing of the armistice" is a statement in a letter received by the Garford Motor Truck Co., Lima, O., from R. G. Johnson, a member of Company D, 405th Telegraph Battalion, Signal Corps, A. E. F., who wrote from Reineland. Johnson stated that previous to the war he was a salesman and at one time distributor for trucks. He has high praise for the work of the Garford trucks in the army.

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RESTORATION OF MACK TRUCKS

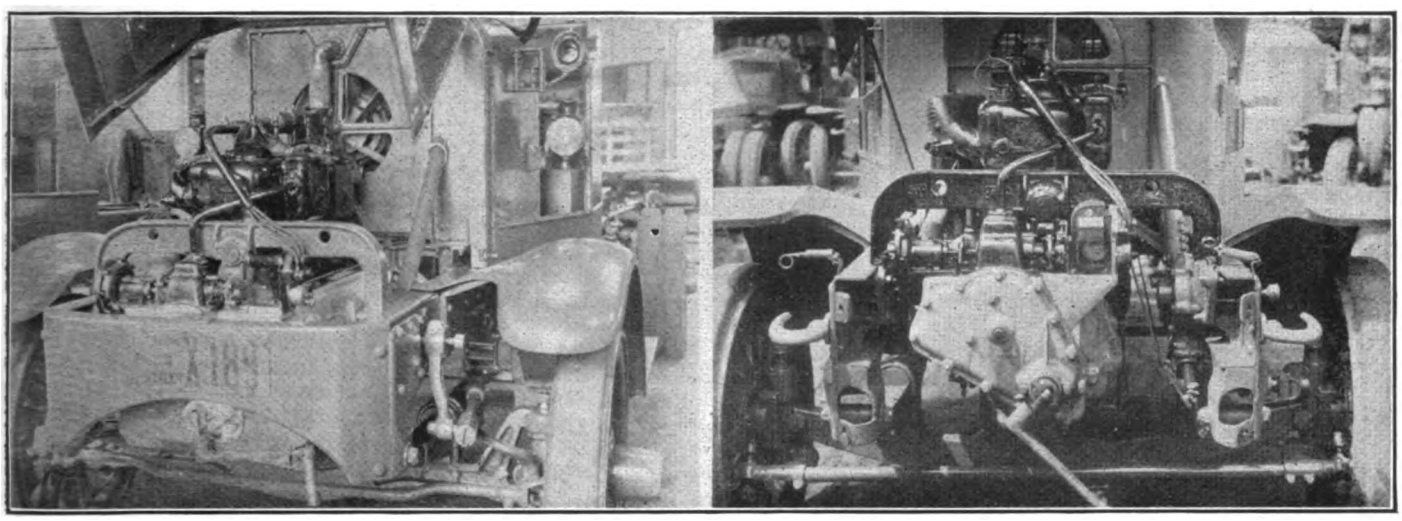
Constructional Characteristics of the Engine, Cooling and Lubricating Systems, the Radiator and the Transmission Gearset of Both Old and New Chassis

OVERHAULING as applied to the automotive vehicle is accepted as meaning disassembling for cleaning and examination and restoration and adjustment so that normal functioning is realized. From one viewpoint this work done systematically on any machine will be practically the same as on another and general instruction will apply to all. But each make, and frequently each size of a make, will differ with reference to design and construction, usually in detail of assembly if not in the various units. Each succeeding production of a size will be more or less changed as compared with former machines. For these reasons the man who is familiar with one size or type of vehicle may not have knowledge of others built by the same manufacturer.

This article treats in this manner of what work may be advantageously done on Mack trucks, either as a general inspection for adjustment, or for examination of individual units, or repair or restoration, as the owner or driver desires to apply the information.

Differences of Cooling Systems.

If the truck is one of the older types, it will differ with the later machines with reference to the principal units. For instance, the radiators of the earlier models were built with honeycomb cooling sections connected in the conventional way by suitable hose to the water pump and the water outlet manifold of the engine. A radiator should be cleaned several times during the year to remove scale and sediment that accumulates in



At Left: The Mack Truck Engine with the Hood Raised for Inspection, Showing Accessibility of the Power Plant; at Right, the Front Frame Member Removed to Allow Work on the Forward End of the Engine.

Instruction books are exceedingly valuable, and serve a very useful purpose, but are often disregarded. In this series of short articles no attempt will be made to deal with each particular subject as would be necessary to describe all the work required to restore a truck chassis, for the main object is to point out wherein these machines differ from what may be regarded as conventional practise, and to make such suggestions as will benefit the reader in the event he does his own work. In this sense they may supplement instruction books.

For illustration, a lubricating system, a cooling system, an ignition system, a clutch, a transmission gearset, an axle, or perhaps several of these units, may have unusual design and construction, and description of these, the points where wear may be anticipated, and the provision for adjustment and restoration, will be dealt with to whatever extent may appear desirable.

cooling systems sufficiently at times to partially stop the flow of the water.

This may best be done by drawing the water from the cooling system and refilling it with a solution of washing soda and water. To prepare this solution, dissolve in hot water all the washing soda that the water will readily take up, suiting the amount of soda and water to the size of the radiator.

Fill the radiator and run the engine from 20 minutes to a half hour. Let it stand for 20 minutes longer and then draw off the solution and refill the system with clear water. Drain it a second time and refill. Cleaning in this manner three or four times a year will keep the cooling system practically free from sediment and rust. The soda solution will not damage the hose connections, as it is in the cooling system but a short time.

This method of cleaning can be followed with the later type radiators, although these are of different construction. These later radiators are incorporated in the dashes at the rear of the engines, and they are a tubular type. They are built in two sections, each made up of 30 or more copper tubes, forming half circles, the tube ends being held in top and bottom plates in triangular pockets, so that there is free flow into and from the tubes and each tube is separate and air forced by the fan can readily pass through them. These tubes form the cooling section, the plates being bolted to top and bottom tanks. The assembly is made by easily removable bolts. No solder is used in the construction of this radiator and there is small chance of leaks developing. The design of the radiator and its location protect it against damage from vibration stresses and contact with objects.

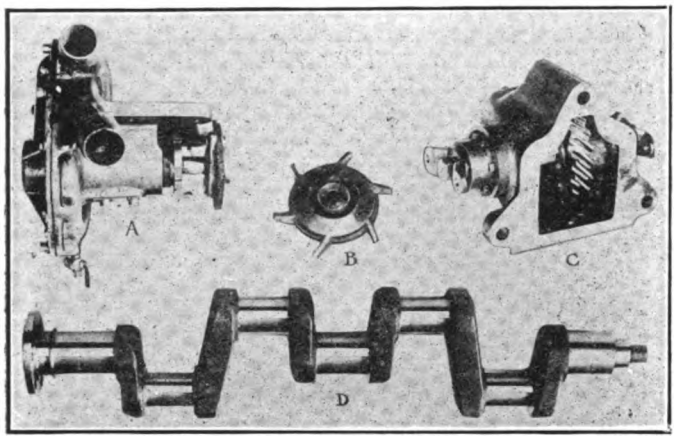
The Water Pump and Packing.

The water pump is a centrifugal "nonclog" type. It is made of cast iron and has a navy bronze rotor keyed to a special steel shaft. The rotor is balanced, the water being fed to it from both sides. There are no grease cups on the pump, so there is no possibility of grease or oil getting into the cooling system and doing more or less damage. The pump is driven from a spiral gear by a leather universal joint that can easily be disconnected to take the pump off. The packing for the pump is made to size and fits into a large adjustable gland. This packing is a combination of hemp and graphite, moulded to shape and machined. The packing washers are conical and split, and as the gland is taken up the packing will increase its outside diameter and decrease its inside diameter and prevent water leaking by the pump shaft.

From time to time this packing needs to be tightened to compensate wear of the shaft on the packing, and this is usually evidenced by a small leak at the gland. Adjusting from time to time will prevent leakage developing.

The fuel inlet manifold of this engine is somewhat different from the conven-

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Some Mack Engine Components: A, the Water Pump Assembled; B, the Water Pump Rotor; C, the Camshaft Gear Housing; D, the Three-Journal Crankshaft.

tional types from the fact that it not only carries the gas to the cylinders, but water circulating from the radiator to the engine is passed through a passage in it. This water is heated and increases the temperature of the fuel gas before it passes into the combustion chambers of the engine.

The exhaust manifold is a double-chambered or twinned type, arranged in such a manner that the gas pressure in one exhausting cylinder has no effect on the gas pressure in another exhausting cylinder. This materially decreases back pressure, scavenges the cylinders better and produces a resultant increase in horsepower. Cooling fins are placed on the manifold to increase radiation of the exhaust gases before they reach the muffler.

The ignition current source is a high-tension magneto, with vibrating duplex coil and battery equipment, which insures easy starting. When the engine is warm it will start by throwing the switch. All wires are incased in fiber tubing, which offers high resistance to eddy currents.

The Mack Lubricating System.

The engine is designed exclusively for these trucks and the construction is the same though the dimensions vary. There are several characteristics of this engine that are not found in other makes. For instance the dual oiling system insures a supply of oil at all times, regardless of the temperature. The cylinders, pistons, wristpins, crankpins, camshaft, cams, valve lifters and oil pump driving gears are lubricated by splash. The camshaft main bearings and the three timing gears are lubricated by gravity.

The lower crankcase section serves as an oil reservoir, carries the oil pump, has the oil troughs cast integral with it and also has fins cast along the bottom to more effectively cool the lubricating oil. The front cylinder of the forward cylinder unit has an oil reservoir cast integral with it and which is partly water jacketed. The oil piping is cast into and is integral with the upper and lower crankcase sections and the front cylinder. There are but two external oil pipes. One leads from the cylinder oil reservoir to the magneto timing gear housing and one from the crankcase to the oil pressure gauge on the dash. There are two oil strainers, one surrounding pump and one in cylinder reservoir.

The circulation of the oil is as follows: The oil flows from the crankcase reservoir through the strainer into the pump, is pumped to the cylinder reservoir, passes through another strainer and flows by gravity through pipes to the oil troughs in the lower crankcase. There is an oil splasher on each connecting rod cap which is forged integral with the cap, machined hollow and bent. These splashers dip into the oil in the troughs, force it into the connecting rod bearings and originate the oil splash. The whole interior of the motor is thus kept constantly flooded with lubricant which flows over all the wearing surfaces and into wristpin and camshaft bearings. The surplus oil overflows into the reservoir to be used over again. Oil is led directly into the three crankshaft main bearings, flowing by gravity through the pipes from the cylinder oil reservoir. The pump is designed to supply an excess of oil at all times to the cylinder reservoir, this excess flows by gravity through a large external pipe to the magneto timing gear housing, keeping all timing gears lubricated by the constant flow of oil. This system provides against the most adverse conditions.

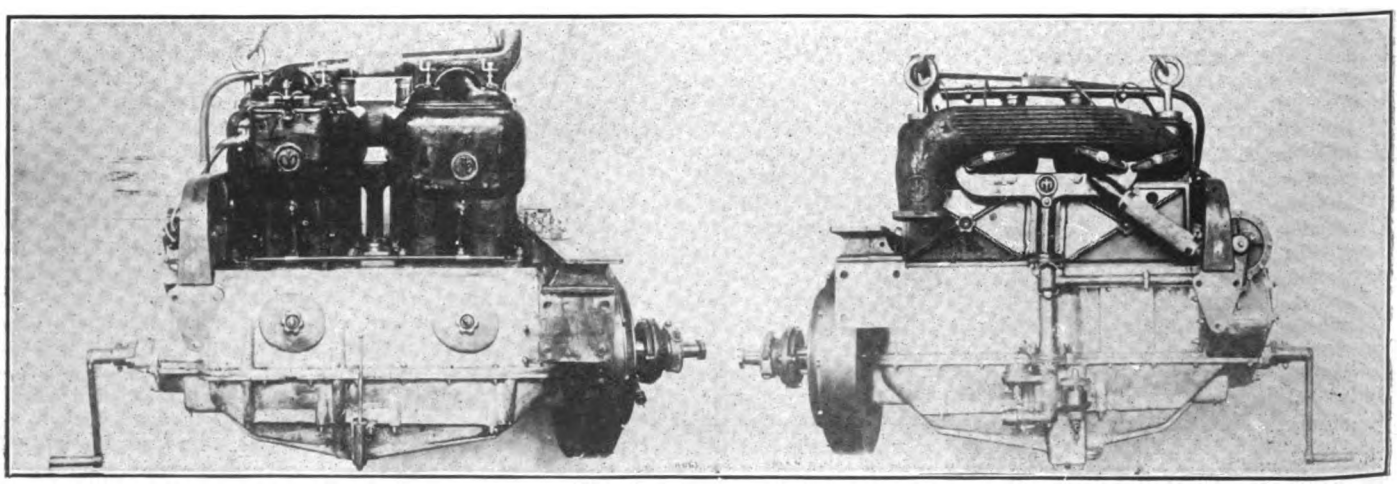
In cold weather when the oil is thick and heavy and would not flow readily into the small interstices of the bearings, it is heated in the cylinder reservoir by the jacketed water. In warm weather, or when the engine is working under heavy loads, the oil is prevented from being overheated by the jacket water, which cannot become hotter than the boiling temperature (212 degrees Fahrenheit).

In cold weather bearings are not destroyed before the oil reaches the proper viscosity to flow into them, and in warm weather, or when the motor is heavily loaded, they are not destroyed by overheating. Provision has been made for the two extremes. The breathers for the release of the crankcase compression have their passages through the valve spring chambers, which are enclosed, allowing the valve springs and lifters to operate in a haze of oil, thus keeping them lubricated at all times. This oil should be drawn out several times a year and after flushing with kerosene the reservoir should be refilled with fresh oil.

To clean carbon from the cylinders and grind the valves of the Mack engine the caps over the valves on the head of the cylinders and the side plates on the side of the engine case are removed and with a valve spring lifting tool lift the springs and remove the locking pins. The valves are made from tungsten steel, a very hard metal that resists wear and will require grinding only at long intervals. The carbon can be removed either with hand scrapers or by burning out the cylinders with an oxy-acetylene burning outfit.

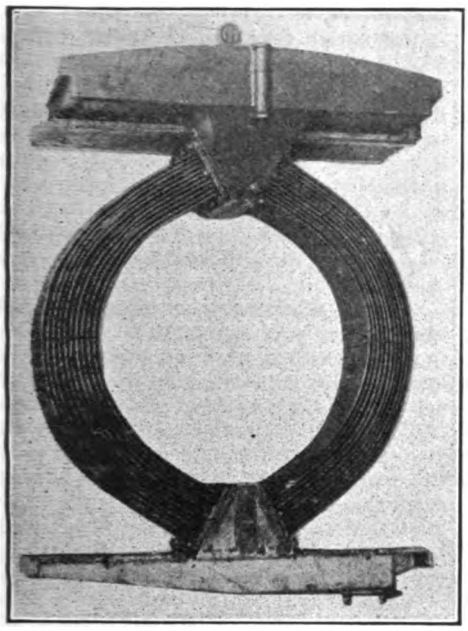
Inspecting and Adjusting Bearings.

The bearings can be examined by removing the hand plates on the side of the engine case. As the crankshaft is unusually large and heavy, having main journals three inches diameter and crankpins 2⅜ inches diameter, it cannot be tested for bearing looseness by moving it



The Mack AC Truck Engine: At Left, the Left Side, Showing the Special Cylinder Oil Reservoir and the Inspection Plates of the Upper Crankcase Section; at Right, the Valve Side, with the Water Connection and the Special Exhaust Manifold.

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The Cooling Section of Mack Radiators, Consisting of Top and Bottom Tanks and Semi-Circular Groups of Copper Tubes.

with the hand. The best method would probably be to insert a short pinch bar through a hand hole plate and move the shaft slightly against the bearings. This would afford some idea of the degree of looseness in the bearings. By placing a jack under the flywheel the looseness of the rear main bearing can be determined. A slight play may be found. The safest course will be to adjust the bearings.

The best way to get at them is by unbolting and removing the lower half of the base of engine. The oil should be drained from the crankcase and when the base has been removed the bearings can be easily got at. Remove the caps one at a time, taking out a thin shim from each side and tightening each cap in place, turning the crankshaft and trying the bearing till the right degree of tightness is reached. Leave this bearing a little loose and tighten the other two bearings similarly. Leave these bearings loose and tighten the connecting rod bearings in the same manner as the main bearings. When all are tightened for adjustment seat all the caps and fasten the nuts as they were before they were loosened.

Put on the lower half of the engine base and fill it with fresh oil, filling it higher than is required for ordinary operation. This is very necessary on account of the tightened bearings. The journals of the Mack crankshaft and camshaft will seldom show wear nor will they wear out of round.

The engine bearings are of unusually large proportions. The front main bearing is three inches diameter and 3¼ inches long, the center bearing three inches diameter and 3½ inches long and the rear bearing three inches diameter and four inches long. The total bearing length is 11 inches. The connecting rod bearings are 2⅜ inches diameter and 3¼ inches long.

The governor is a centrifugal type of Mack design and built into the engine. The governor weights are in the camshaft timing gearcase and when functioning actuate a shaft that operates a butterfly valve in the intake manifold, varying the supply of fuel. The front end of the truck frame is removable so that one can easily get at any part of the motor, magneto or pump from the front.

The clutch is a three-plate dry disc type, having six plates lined with asbestos running against six steel plates with outside adjustment for setting the plates closer together or farther apart as desired, provided with sufficient grease cups for lubrication, which must be kept filled and turned down occasionally.

Power Transmission System.

The transmission gearset of Mack trucks is a selective sliding gear type, having three forward speed ratios and reverse. For all chain driven chassis it is combined with the jackshaft as a unit, which is suspended from the frame at three points.

The forward point of support is in the center directly over the drive shaft, it being held to the frame cross member by two ¾-inch steel studs. The rear end is supported by two brackets, one at either end of the jackshaft housing, these being riveted to the frame and so arranged that the frame may distort without causing any stress on the unit, preventing disalignment of gears, shafts and bearings and obviating the possibility of fracturing the aluminum housing.

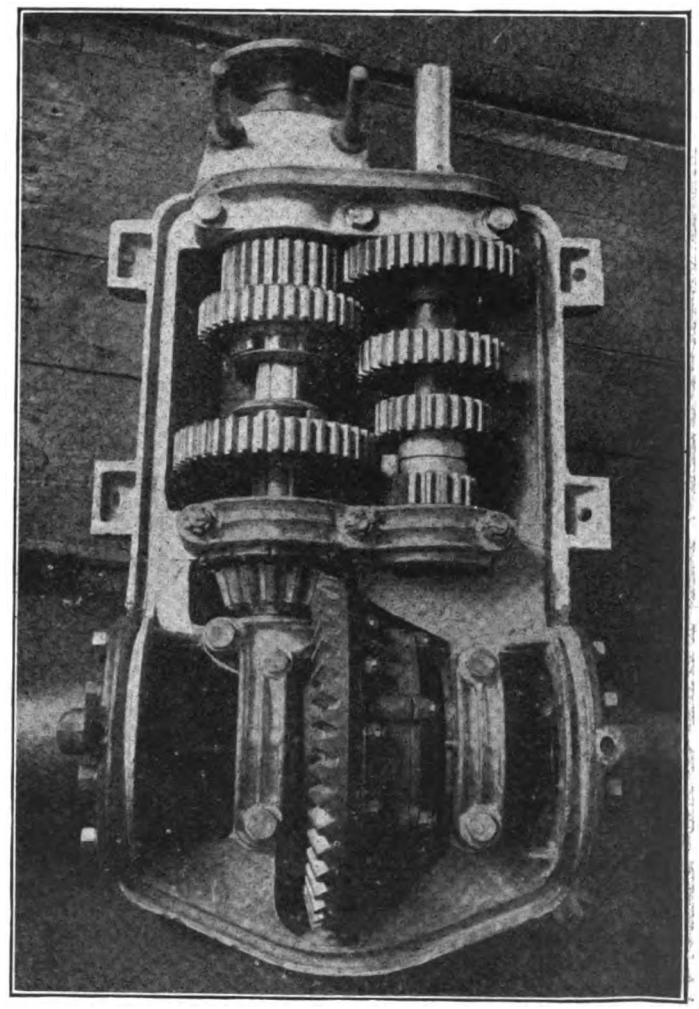
The transmission gearset housing is in two parts, the upper half carrying the entire gearset mechanism, the bearings being capped to the case from below. The lower case serves chiefly as a cover and container for the gearset lubricant. It is machined only for a drain cock, fits into a felt lined groove in the upper case section, and is held in place by three straps which pass under it and bolt to the upper housing. These straps can be disassembled, the lower case removed and the gearset inspected without disturbing any other part of the mechanism.

The shafts of the transmission are special heat treated and hardened to resist wear. The main shaft is two inches diameter below the splines. The shaft is milled lengthwise, having four splines ⅝ inch wide and 3/16 inch high. The gears slide very easily on this shaft because of its size and the accuracy of the milling.

The countershaft is made of nickel alloy steel 2⅛ inches diameter and is mounted on Timken roller bearings. It extends forward through the transmission case 5¾ inches and can be used to operate auxiliary power devices, such as pumps, winches and automatic hoists. The shaft is well supported and rigid, there being 11⅜ inches between bearings. The transmission reverse gear is mounted on Timken bearings and is carried by a separate casting, which is bolted to the top of the upper section of the transmission case and can be removed through the top of the case for inspection. The transmission shifter gate is a casting that bolts to the top of the upper transmission case and can be easily removed for examination. All transmission bearings are anti-friction and are, wherever possible, mounted in separate cages. The cages are not threaded into the aluminum case, but fit into accurately machined bores.

The Jackshaft and Brakes.

The jackshaft is combined with the transmission gearset. All jackshaft gears are made of special alloy steel and heat treated by the same process used for the



Upper Half of the Mack Transmission Gearset with the Lower Section, That Serves as an Oil Reservoir, Dropped to Show Accessibility.

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transmission gears. The driving bevel gear is not keyed to a taper shaft, but is held against the taper end by a nut. It is driven by the splines of the transmission sliding gear shaft, which fits into its forward end. The driven bevel gear is secured to the differential housing by 12 ½-inch alloy steel bolts.

The two differential bevel gears are broached to receive the live jackshafts. There are three differential pinions. The live jackshafts are made of alloy nickel steel and are 1¾ inches in diameter. The service brake drum castings are keyed to the outward tapered ends of the shafts and the driving sprockets are bolted to the brake castings. The service brakes are external contracting, are equalized and are located on the jackshaft close to the frame and operated by a pedal.

The jackshaft end bearings are located between the brake drums and the sprockets. By this arrangement the bearings are loaded equally, the driving stress on one side and the braking stress on the other, and the live jackshafts are also partly relieved of bending stresses. The brakes are air cooled. There are fan blades cast inside of the drums and openings to allow free circulation of air. The brake shoes have fins cast on them for the radiation of heat. The brake connections can be adjusted by hand. The sprockets are of a special steel, case hardened to withstand wear and give long life. The roller chains are either Baldwin or Whitney make.

The lubrication for the transmission and differential gearsets is either heavy steam cylinder oil or a grease that has more or less of a stringy consistency with a little soft oil mixed with it. Whatever is used should cling to the face of the gears when in use so as to thoroughly lubricate the gears in the upper part of the case. The roller chain should be taken off occasionally and washed with kerosene to remove the dirt and grease. It should preferably be lubricated with a mixture of oil and graphite. The brakes on the service pedal can be easily removed for relining and should be relined if necessary with a first class brake lining.

The rear axle is a dead axle type and is equipped with Timken roller bearings. Provision is made for lubrication, by plugs in the hubs of the wheels. A grease gun is used for putting the grease into the bearings.

The Worm Driven Axle.

In the worm drive trucks the power transmission system is conventional. The transmission gearset is set just back of the clutch member and is assembled with it and the engine. A drive shaft extends from the transmission gearset case through three universal joints to the worm shaft of the rear axle. The transmission gearset of these chassis is a four forward speed ratio and reverse. The shafts are mounted on Timken bearings and the gears are made of alloy nickel steel.

The differential is a bevel gear type. The gears are nickel steel, specially heat treated. The load of the differential is carried on the side cases on Timken bearings and not on the shafts that fit into the differential.

The rear axle is a full floating type, the load being on the housing. The worm and worm wheel are the well known David Brown type, the shaft being a special composition of steel and the worm wheel of bronze.

The worm shaft, worm wheel and differential gears are lubricated by a bath of steam cylinder oil in which the worm wheel turns. Provision is made for take up on the worm at the forward end by means of a threaded bushing and locking key.

The steering gear should have some attention. The Mack unit is massive and all wearing parts are made unusually heavy. The gear that meshes with the worm is made complete, gear and shaft, from a solid piece of steel. An adjustment is provided at the top of the worm for taking up wear. The grease cup at this point should be kept filled and turned down frequently. At the outer end of the gearshaft, where the steering arm is fastened, the end is made square. As wear takes place this arm can be taken off the shaft, turned over by turning the steering wheel, and the arm fitted to a new place on the square. The ends of the tie rod, connecting the front wheels, have ball joints that can be kept well lubricated by placing boots over them and filling the boots with grease.

The three universal joints on the propeller shaft are each covered with a boot and when filled with grease will need attention only at long intervals.

FURNITURE COMPANY REPLACES HORSES WITH TRUCKS.

G. W. Kay, delivery superintendent of W. A. Hathaway company, furniture dealer, New York City, sat down at his desk with a draughtman's compass and drew a circle in the center of which he placed a dot. That dot represented his store, and Mr. Kay was trying to solve the problem of so using teams that he could increase the delivery radius with a few more teams and trucks.

Try as he might, Kay could not solve the problem on paper with satisfaction to his customers and economy to his firm. He finally decided that it couldn't be done—with horses and wagons, anyway.

Mr. Kay at that time knew little about trucks, but he called up another delivery superintendent and got some facts and figures, on speed, capacity, economy, etc., and then drew another circle. Its radius was much greater than that of the first circle, for Mr. Kay had found that a truck would double the delivery radius and serve the customer better and at lower cost.

He soon had two Federal 1½-ton trucks at work and they proved up all that he had worked out on paper. These two trucks cover the territory within a radius of 40 miles from the store. Two country trips are made each week and more if business warrants, the balance of the week being devoted to the city and suburban districts.

During one month recently the two trucks traveled 1726.3 miles, handling 2068 pieces of furniture, the total value of deliveries being more than $22,600. The delivery rate was 24½ cents per piece. G. W. McKay, delivery superintendent, says that truck delivery is 25 to 30 per cent. cheaper than horse delivery and very much more satisfactory to the customer and dealer.

NEW ORGANIZATION TO AID ARGENTINE TRADE.

Tractor manufacturers seeking business in South America will be interested in the formation of an Argentine-American Chamber of Commerce in New York City under the auspices of the Chamber of Commerce of Buenos Aires. The purpose is to foster trade relations between the two countries, to encourage American business men to invest money in Argentina, and to serve as a clearing house for all business. Its membership will include citizens of both countries.

Officers of the new organization will be chosen next week. The members of the board of directors are:

J. H. Allen, National City Bank; W. H. Booth, Guaranty Trust Co.; J. C. Baldwin, Jr., New York Quebracho Extract Co.; E. C. Hoyt, Central Leather Co.; J. L. Merrill, All-American Cable Co.; C. H. Sanford, Samuel B. Hale & Co.; G. L. Stone, Hayden, Stone & Co.; Hugo Wilson, Argentine Embassy; J. F. Barber, Barber Steamship Lines, Inc.; John Barrett, Pan-American Union; J. P. Flower, W. R. Grace & Co.; H. S. Houston, Doubleday-Page Co.; J. A. Mitre, La Nacion; P. De Ronde, Oriental Steamship Co.; C. A. Stone, American International Corporation; C. H. Sherrill, former minister to Argentina; D. C. Wing, First National Bank.

Enrique Gil, who is secretary of the new organization, said that steps would be taken to form an arbitration pact between the United States Chamber of Commerce and the new chamber to settle trade difficulties. Mr. Wilson and Secretary Villanuil of the Buenos Aires chamber will be special representatives of the Banco de Comercio. Articles of incorporation have been filed and the temporary headquarters will be at 1 Wall street in the office of Mr. Gil.

ENOUGH "GAS" IF NOT WASTED SAYS KISSEL.

"If 'motor America' will continue to not waste its fuel, I do not see but that there will be not only enough 'gas' for everybody, but that it can be sold at right price for some time to come," says W. L. Kissel, secretary and treasurer of the Kissel Motor Car Co.

"I understand that during 1918 under the stress of meeting war time demands, this country produced more than 85,000,000 barrels of gasoline, an increase for the year of more than 17,000,000 barrels.

"In 1918, before we entered the war, we produced a little short of 50,000,000 barrels. In 1917 our war activity increased the production to nearly 68,000,000 barrels, a daily increase of more than 50,000 barrels. And in 1918 the daily increase over 1917 was about 47,000 barrels."

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NEW DEVICE SAID TO PREVENT TRUCK OVERLOADING.

A new device, called the Cammen Carsafe Load Governor, is claimed to prevent overloading. It is attached to one of the rear spring shackles. It is built somewhat like an inversed hydraulic press and carries an indicator which is set at the point indicating the proper load for the truck. This device is connected electrically with a control on the dash board. When the load put on the truck is greater than the weight provided for on the indicator, the electrical mechanism opens the ignition circuit and the engine cannot be started. Only by lightening the load can the driver start the engine.

The mechanism is so arranged that when the truck is started the governor becomes inoperative, so that the road jolts do not interfere with the operation of the vehicle. It is asserted that the device cannot be tampered with successfully by a driver who wants to carry a heavier load than is considered safe for the truck.

BIG INCREASE IN SALES OF MACK TRUCKS.

The International Motor Co. announces that its sales for March showed the biggest increase of any month since the signing of the armistice. An outstanding feature of this big increase of business is that fully 50 per cent. of the orders are for Mack heavy duty trucks, ranging from 3½ tons to 7½ tons capacity. This is interpreted as a growing realization of the greater economy of large units.

The marked increase of new customers is attributed in part to the fact that returning soldiers who have seen Mack trucks perform for the United States engineers in France are telling of their wonderful work in the war. Mack trucks were much sought after by soldiers who had to drive trucks because it was practically impossible to stall them, and they gave the least trouble in operation. This appealed to tired and worn soldiers, who are making their preference known.

GARFORD INCREASES EXPORT DEPARTMENT.

The Garford Motor Truck Co., Lima, O., is materially increasing its activities in the export field in anticipation of a banner year in foreign markets. In line with these activities E. F. Sayers, general manager of the export department, announces the appointment of C. E. Wirsching as his assistant.

Mr. Wirsching has been active in the export field for several years, during the last four of which he was export manager of the General Motors Export Co., New York City, being one of the organizers of this company.

About a year ago he severed his connection with the General Motors Co. and accepted a commission with the Motor Transport Corps located at Jacksonville, Fla. Two days before he was to sail the armistice was signed and consequently Mr. Wirsching was released from service.

Clark Steel Wheels for Contractors' Power Trucks

The Clark Equipment Co., Buchanan, Mich., has recently developed a new type of steel road building wheel for motor trucks. This new wheel is designed for use in road building so that contractors engaged in the work may have in their trucks a larger sphere of usefulness.

The wheels are made with a broad rim face and are used without tires, which supports the heaviest truck upon soft ground, sand, gravel and crushed stone surfaces, providing an added advantage in that the wheel levels and packs the newly constructed road bed.

The wheels are constructed with either a single or a double set of spokes, the latter side by side and connected at the outer or rim end with a tie piece cast integrally. In the rear wheels the outer set of arms is connected at the inner ends to form the wheel hub. The inner set of arms unite to form a flange on which may be fastened a chain wheel, internal gear or other element to suit the particular type of drive used on the truck.

The spokes or arms of the wheel are made tee shape, thus providing a strong as well as light section. This construction applies to the rear wheels, the front wheels are made with a single set of arms, the face of the wheels not being as broad as the rears.

The wheels are interchangeable with ordinary truck wheels and are built for all types of drive; chain, internal gear and worm, and are made to the requirements of the truck builder in any size desired. The constant passing of heavy trucks over the sharp, uneven, surface of the roadbed, soon wears away the tires on the vehicle. It is also destructive to the road, the wheels sinking in owing to the weight of the vehicle and the narrow width of the tires. The Clark road building wheels support the truck on the road surface and serve as a heavy road roller. The wheels are made with a cast steel center inserted in a rolled steel rim, to obtain lightness with strength.

Motor trucks equipped with these wheels are enabled to pull loaded trailers over heavy grades of ordinary soil with detachable wheel cleats, in which case the rims may be drilled for the application of the cleats.

The Clark Equipment Co. and its predecessor have engaged in the manufacture of steel wheels extensively, producing various types, both spoked and disc and either solid or hollow spokes. These wheels have been used for truck equipment with great success and are claimed to have advantage in that they cannot be affected by climatic changes, by moisture, and that they will not become distorted and wear the tire unequally. The steel wheels are also claimed to be extremely light and to have resilient qualities that are not found in other types. The wheels are built for all sizes of trucks and they are suited for use with all standard makes of tires.

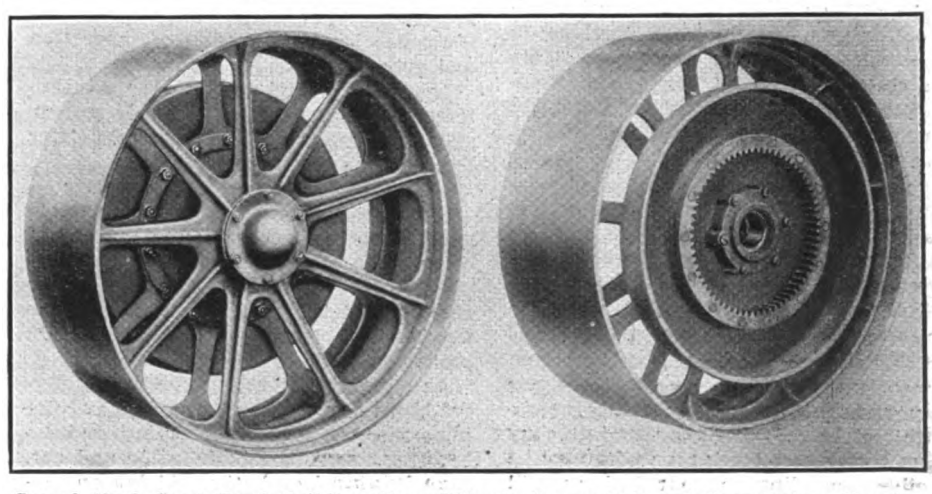
MEERS JOINS PANHARD MOTORS CO.

I. B. Meers has been appointed general sales manager of the Panhard Motors Co., Grand Haven, Mich. Mr. Meers' experience in the automobile industry covers a period of 12 years, during which time he has been employed in various sales capacities in connection with domestic and foreign business. Mr. Meers will handle export affairs of the company as well as American sales.

He has had a broad experience in internal sales work, covering the United States and foreign countries, and has traveled for different automobile companies, practically covering all sales territories in the United States.

GOOD SERVICE FROM A TRUCK.

L. H. B. Farr, sealer of weights and measures of Kern county, California, has driven a 1½-ton Federal for over four years, averaging 10,000 miles each year. One trip he makes through snow starting at an elevation of approximately 4000 feet and climbing to the summit of an elevation of better than 7000 feet within nine miles travel. In parts of his territory he has to make his own roads in getting in and out of stock ranches, where he has to test heavy scales.



Set of Clark Steel Road Building Rear Wheels for an Internal Gear Driven Truck, Showing Both Sides and the General Construction of the Units.

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VALUE OF COST OPERATING RECORD

Transportation Expert Advises Truck Owners to Study Railroad Methods as Best Developed to Determine Accurate Information

DISCUSSION of truck operating costs is educational because it causes men to apply the subject to their own operations, and conclusions will be reached that will be beneficial if the statements are based upon conditions that are understood. There is no question that if the records of several concerns operating service and vehicles in a given work were examined there would be considerable variance, due to different administrations and policies, and were these to be analyzed further there would seemingly be sufficient reasons for these differences, at least in the judgment of the executives.

For this reason there can be no precise standard by which measure can be made of efficiency or inefficiency, but there is one certain standard for each individual enterprise, and that is, having found a precise cost of operating, undertaking to do a given work for less expense, or increasing the work done for a stated price or figure.

This means, of course, accurate accounting. Truck owners are not usually willing to incur the expense of maintaining systematic record, believing that this means increasing operating cost, losing sight of the fact that the economies will be direct saving. They are not disposed to admit that their judgment can be criticised. They are often unwilling to make a study of what will, in the opinion of those of broad experience, be practically productive of economies.

Where men have a common interest they may be more inclined to listen to statements applied generally, and when meetings are held good advice is frequently obtainable from those who can speak with the authority of knowledge and careful study.

The Detroit Transportation Association, an organization of truck owners, has inaugurated a plan in connection with its meetings that is intensely practical and has the merit of presenting different phases of highway haulage to those who are vitally concerned. This is a series of talks by transportation engineers, each necessarily brief, intended to suggest efficiencies and economies that may reasonably be expected.

An address made before this association by C. E. Stone, transportation engineer of the J. C. Wilson Co., is an illustration of the subjects dealt with and the scope of the talks. It was in substance as follows:

In the establishment of this, the Detroit Transportation Association, you have, I believe, done something better than the majority of you really appreciate and I sincerely hope that in a very short time every truck man who may be eligible according to your by-laws will seek membership.

My 17 years of exclusive connection with the motor truck industry has conclusively proven to me how much worry, trouble, criminal waste of money and financial loss may be eliminated from your business through co-operation and the interchange of ideas and experience.

In the past number of years there has developed a number of cost systems, of which the present National Standard Cost System is probably the best, and represents a plan of bookkeeping that no truck owner, no matter how small, can well afford to ignore.

In advocating its universal use, you gentlemen are going to accomplish in a very short space of time what would otherwise require years of blind groping to bring about. During this interval many men would be forced to the wall through lack of sufficient facts upon which to base adequate charges.

The one basic factor in any transportation scheme is absolute known costs—without them none can succeed. The railroads have them—why not the motor truck operator?

What Figures Mean to Railroads.

So carefully kept are the figures of the various transportation lines that any physical or social change immediately becomes apparent and is given consideration. For instance, when women started wearing tight skirts some months ago the fact became instantly known to the operating heads of the Pennsylvania railroad—the style delayed their train stops exactly 16 seconds.

Your organization, through the "return load" idea and in other ways is working toward the correction of this enormous costly condition. There is a great future before it in this one field alone.

Gentlemen, if you asked me for one single suggestion for your universal well being, I would say—study and adopt insofar as is possible, railroad practise. The roads are awake to the imperative importance of absolutely knowing costs—they also know the value of inspection and upkeep.

Lack of, or indifference to, the mechanical condition of motor trucks is responsible for the down fall of many who enter the trucking business.

Need of Systematic Maintenance.

In railroad practise an express passenger locomotive is inspected at the end of every 80 miles—a freight locomotive every 150 or 200 miles. As many as five inspectors work on a locomotive at one time. Each is responsible for certain groups or parts.

As showing the relative cost of different kinds of maintenance service and the importance placed on cleaning and inspecting every part both inside and out, the following distribution of labor on passenger engines may be of interest:

Wiping, cleaning, washing and inspection	60%
Clinkering and firing up	12%
Watching, hostling and calling	12%
Supplying, coaling and sanding	10%
Turn table and laborers	6%
Total	100%

Under these conditions passenger locomotives run 127,000 miles without going to the shop for overhauling—freight locomotives 100,000 miles.

On four out of five of the trunk lines West of New York the locomotive repairs are 4.4, 7, 12 and 16.6 cents. The first road has the heaviest grades of the four, the last road runs 30,000,000 locomotive miles. Its repairs cost 12 cents per mile more than the first—it is losing $3,600,000 a year.

Trucks Have Hard Usage.

Just as the transportation lines have set down "roundhouse" care as of paramount importance, so should you as motor truck operators give the same subject even more attention, for your machines are traveling over all conditions of road surface, multiplying many times the necessity of inspection work and as a rule your vehicles are not operated by as highly trained and skilled hands.

The Interstate Commerce Commission supervises such work for the railroads—often without possibly due and proper consideration of expenses and invested capital. You are an interstate commission unto yourselves and the work you are now doing toward the establishment of proper and adequate rate per ton, hour or day is worthy of universal support.

The average truck man's quotation for service is rarely based upon known facts and figures. The practise of slashing rates or following those of the other fellow, represents as great an evil in the development of motor transportation as anything the motor truck dealer or his salesman was guilty of in the past.

This insidious practise must cease, if for no other reason, all eligible men should join with the Detroit Transportation Association—give their whole-hearted effort to assist Mr. Moreton and other officers in pushing this vitally important thing through.

What Co-Operation Will Accomplish.

The Detroit Transportation Association, to my mind, is like unto a great, fine motor truck loaded with the most valuable and important merchandise consigned to each of you. At the loading platform its wheels have encountered the mass of slime and mud of ignorance, inefficiency and indifference. To get her started all must lend a hand. The driver and his helpers are able men who know their business but because of the conditions require assistance. Therefore, everybody push! Grab a spoke, bumper or frame—put your shoulder against the tailgate and heave. The truck will move and once started out of the mess with its load will bring salvation to each and every one.

The responsibility for the prevailing

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ignorance as to costs and charges cannot be laid to the truck operator alone—the motor truck manufacturer has in a very large part contributed. For years his literature and so-called sales arguments have been replete with misstatements, and fragmentary facts. Tables of operating costs were distributed which seemed to conclusively prove to the prospective buyer that in comparison many of our recent war industries are but "pikers" in the return of inflated revenues.

Average Cost for One Service.

Now as professional haulage men you are naturally desirous of studying cost figures and analyzing such factors as influence the various items. I am going to place on the blackboard here the average cost figures of six 3½-ton stake body, Wilson trucks, taken from the cost records of one of our owners here in Detroit.

I want you to notice very carefully the items as represented in these figures. You will notice that "Cost of Doing Business" is eliminated. I have done this advisedly for this item is an unknown quantity for under its heading comes accidents, general expense, bad accounts, advertising, etc. To meet these charges this owner charges up $1 a day per truck which he finds about meets the figures. However, he has a general sinking fund of 10 per cent. of the daily gross receipts of each truck which takes care of this matter.

OPERATION COSTS ON 3½-TON STAKE TRUCK.

Investment—	
Chassis	$3800.00
Body	350.00
	$4150.00
Less tires ($74.25 each, 7000 miles guaranteed)	445.50
	$3704.50
Costs are based upon 300 working days in the year.	
Yearly Fixed Charges—	
Interest on $3704.50 at 6%	$222.27
Insurance—	
Five 75c per hundred	31.13
Collision, full coverage $152, $50 deductible	102.00
Liability (truckman)	135.00
License—	
15c per horsepower (4½x5½—32.4)	4.86
Weight, 15c per 100 pounds, chassis 7000 pounds, body 1800 pounds, total 8800 pounds	13.20
City dray	1.00
Tax 3% on 70% of $4150 ($2905)	87.15
Garage, $15 per month	180.00
Driver, $5 per day (300 days)	1500.00
Per year	$2276.61
300 days $2276.61, per day cost	$7.58
Operating Costs—	
Fuel, 25c per gallon, six miles a gallon, per mile	$.040
Lubricants, 60c gallon, 150 miles a gallon, per mile	.004
Tires, 7000 miles set, $445.50, per mile	.064
Depreciation earned, $3704.50 on 100,000 miles, per mile	.037
Per mile	$0.145
Overhauling, $300 per year	1.00
60 miles per day at .155	8.70
Total daily cost	$17.28
Per ton mile cost	$0.288

Salesmen Must Sell Transportation Efficiency

That the sale of a motor truck is not complete with an argument on the merits of the product, but that the salesman must go further and know the transportation problems of his customer is a contention of George D. Wilcox, director of sales and advertising of the Commerce Motor Car Co. In a desire to see truck merchandisers secure the highest transport efficiency, this official has written to President H. B. Hutchins of the University of Michigan offering to employ either for the factory or for Commerce distributors and dealers all graduates from the University of Michigan's newly created Highway Transport Department.

The University of Michigan is the first great university to recognize the great developments in the carriage of cargo over highways. President Hutchins has added a highway transport course which will be varied in character. It will fit students for important positions in the motor truck field. The course embraces the problems of the motor truck thoroughly along construction, merchandising and automobile engineering lines, as well as various phases of the transportation question as presented by the Department of Economics.

These courses develop the student into an all around transportation expert. The highway engineering course, as it is now recognized, treats with the road bed and its relation to the highway vehicle that travels on it. They are as closely related as the rolling stock and the road bed of the railway line.

"The ordinary passenger car salesman is not an efficient truck salesman," Mr. Wilcox declares. "To sell motor trucks and maintain a close relationship with the customer the salesman must know something of his transportation problems and be able to give advice on that subject at all times.

"The customer wants to know how he can add a truck to his business and make it a paying investment. He is more interested in costs, service and returned remuneration than he is in comforts and refinements.

"The end of the war will bring into commercial life a large number of men with practical training in motor trucks. The course they received, both as members of the Motor Transport Corps or the Ordnance Department of the War Department, has aroused their interest in trucks. They will come into commercial life keen to enter the selling field of motor trucks. The University of Michigan now offers a rare chance for men inclined to merchandising trucks.

"While they may have the knowledge necessary to bring out the sales points of the product they sell, this University of Michigan course would graduate them from the ranks of the ordinary salesman to that of transportation engineers. We have a few such men in the industry today who enjoy immense salaries.

"The truck industry is growing fast; it will not have the pitfalls of the early passenger car days and with an opportunity such as the University of Michigan offers, the truck industry will get men of big caliber, executive ability and truck knowledge that will make them worth the salaries that truck manufacturers, distributors or even firms operating large fleets of trucks would be willing to pay."

INCORPORATE AS PERSHING TRANSPORT ROUTE.

Incorporation under the laws of Missouri as the Pershing Transport Route is the first step taken by the Pikes Peak Ocean-to-Ocean Highway Association in its campaign for national recognition as a military route. The organization, which has its national headquarters at Colorado Springs, Col., announces that it has the cabled consent of General J. J. Jershing, from France, which was received shortly after the annual meeting held at St. Joseph, Mo., decided to adopt this name.

Now that another highway body has attempted to use the name, the Pikes Peak Ocean-to-Ocean Highway will make every effort to legally protect its new name. The Pikes Peak route passes through the old home of General Pershing at Laclede, Mo., and it is proposed to stage a big national celebration there this summer, when the troops are home, in honor of the famous general. Delegates from all along the Pikes Peak route—the Pershing Transport route—will be asked to attend.

The first ascent of Pikes Peak by battle tanks is to be made in April during the Victory Loan drive. Government officials have arranged the peak climb as a new test for these monsters that made such a record in France. The tanks will make part of the journey from Kansas City to Colorado Springs via the Pershing Transport route.

At the annual meeting held in St. Joseph it was decided to continue the national headquarters at Colorado Springs and T. W. Ross of that city was elected secretary to succeed the late A. W. Henderson, one of the founders of the Pikes Peak Ocean-to-Ocean Highway. Unusual activity among the various divisions was reported.

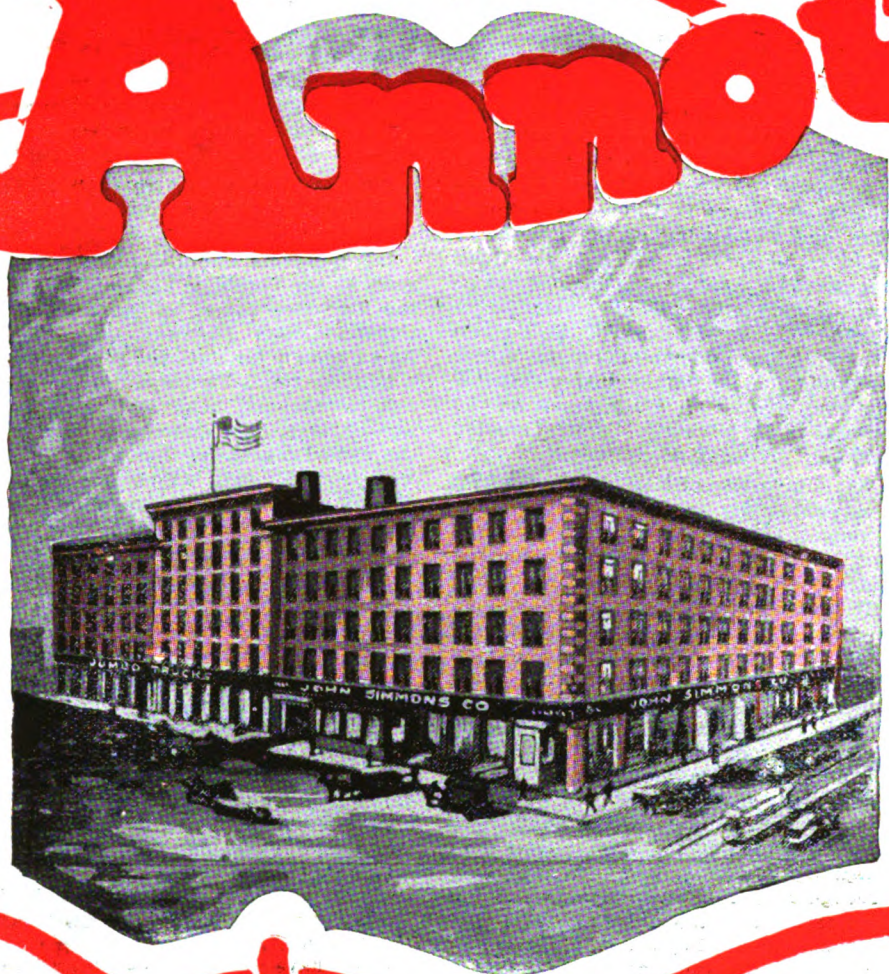
TRUCK DOES THE WORK OF FIVE TEAMS.

Trucks that do the work of two or three teams are not rare, but according to Tom McWhirter, Ellis county road commissioner, Italy, Texas, he has done the work for which five teams would be required with a single Federal truck. This work consisted of five trips, each with 2½ yards of gravel, at a cost of $9.32 daily. The teams could only haul two yards a day at a cost of $4.50. The saving was $1.50 a yard and 10½ more yards were hauled each day by the truck.

McWhirter recently unloaded four cars of gravel, or 120 yards, in eight days, at a cost of $54.56. Formerly a team could unload a car in 30 days at a cost of $135—the saving being $64.44.

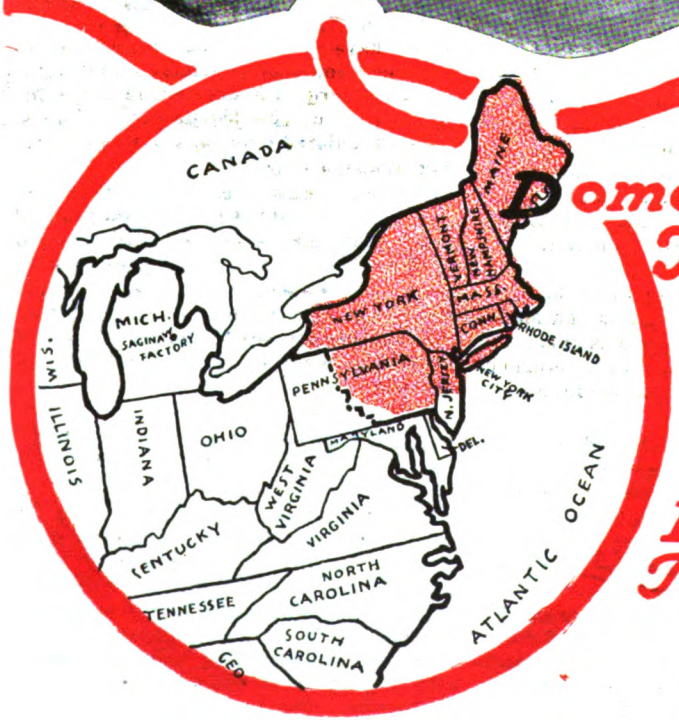
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Announcing



A $5.000.000 ORGANIZATION

The John Simmons Company are one of the oldest and largest wholesale merchandisers and exporters of machinery, heavy hardware, plumbers' supplies, pipe and pipe fittings, etc., in the country. The firm is known in every town, village and hamlet in the entire east. It has an enviable business reputation of over forty years standing. Its financial reputation is of the highest, with an actual investment in the business of over $5,000,000. For more than a year the John Simmons Company has been distributing and exporting Jumbo trucks in a limited way. Big selling possibilities were indicated, but before entering upon Jumbo distribution upon a large scale the John Simmons Company first made sure of Jumbo quality and dependability. Jumbo upkeep records were compared with records of other trucks in the Simmons fleet. A year's service and "no trouble at all" was the result of the Jumbo test. Now the John Simmons Company feels fully warranted in unqualifiedly placing its reputation behind "the truck with the One Year Guarantee," and an organization has been effected which places the John Simmons Company foremost among motor truck distributors in the east.



Domestic Territory

Maine, New Hampshire, Vermont, Connecticut, Massachusetts, Rhode Island, New York State, eastern half of Pennsylvania (east of and including counties of Potter, Clinton, Center, Huntington and Franklin), New Jersey (except lower 8 counties).

Export Territory

South America, Central America, Cuba, West Indies, Europe, Asia, British Isles, Norway, Sweden, Denmark and Australia.

WHAT THIS MEANS TO DEALERS

With such a concern as the John Simmons Company as general eastern distributors of Jumbo trucks, dealers can look for the Jumbo franchise to become the most valuable truck sales opportunity obtainable today. No other concern has such facilities for assisting dealers to make money. No other concern has such resources for promoting the sale of Jumbo trucks on a basis that assures success for Jumbo dealers from the start.

QUICKER DELIVERIES

A large stock of Jumbo trucks will be carried in New York at all times for immediate delivery to dealers throughout the territory.

QUICKER SERVICE

A complete stock of repair parts will be carried in New York for filling orders the same day as received. The broadest kind of a service policy backed by the Jumbo One Year Guarantee will make every Jumbo owner an enthusiatic booster. Our service will keep Jumbo trucks consistently "on the job."

SALES CO-OPERATION

An organization of thorough truck salesmen, every one a transportation expert, will be continually out in the territory to co-operate with dealers and help close sales. A liberal advertising policy and plenty of sales helps will develop retail prospects for every Jumbo dealer. **Nothing will be left undone to make each Jumbo agency a success.**

JOHN SIMMONS COMPANY

102-110 CENTRE STREET NEW YORK CITY

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the biggest motor truck distributor in the east.

JOHN SIMMONS CO.
NEW YORK CITY

JUMBO

"THE OVERSIZE TRUCK WITH THE ONE YEAR GUARANTEE"

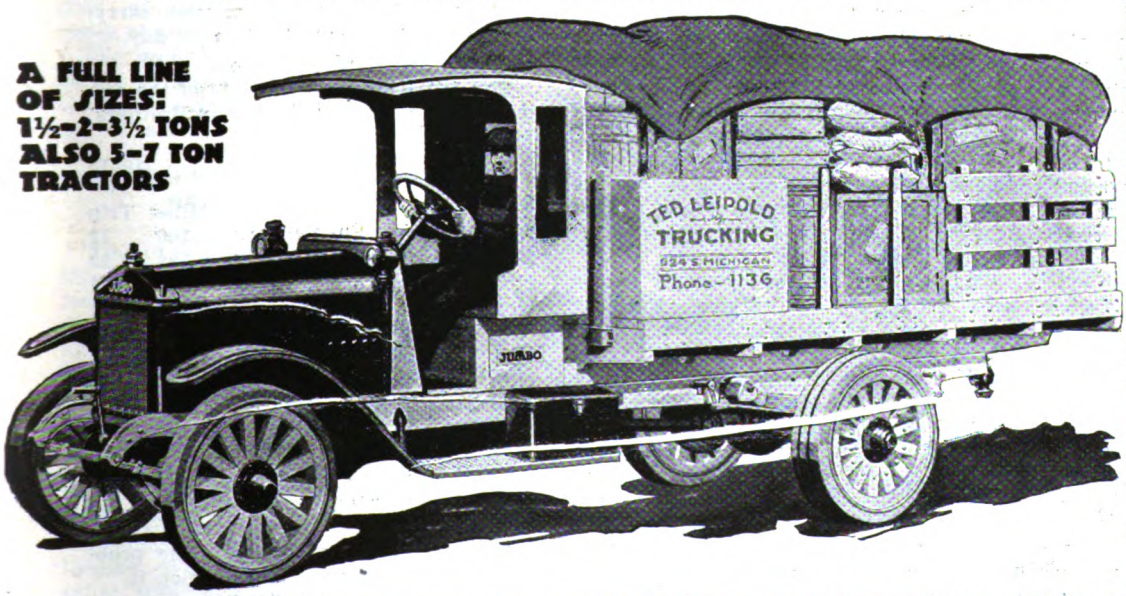
Every Jumbo dealer has made a success right from the beginning. The Jumbo agency is a proven money-maker, because Jumbo trucks stand up under abuse with so little service required and because strength and quality is so apparent to every buyer that sales are easily and quickly made no matter what the competition may be. The largest and most successful truck dealers in the country are selling Jumbo trucks. It is an agency worth having.

Jumbo trucks embrace every selling feature that has been tried, tested and proven best for the purposes intended. Every unit is the best obtainable, regardless of cost, and yet, by right manufacturing methods, Jumbo prices are kept considerably under the average. The purchase value is exceeded by none.

Low upkeep is another Jumbo characteristic. Owners are getting as high as 30,000 miles without a dollar for repairs. Such records are proof that oversize construction pays.

Jumbo trucks are "Good-Will Builders." That's why the Jumbo agency is so desirable to dealers who are looking to the future. Dealers, write for territory.

A FULL LINE OF SIZES: 1½-2-3½ TONS ALSO 5-7 TON TRACTORS



UNITS THAT EVERYBODY KNOWS

BUDA MOTOR—
The strongest, most dependable and most thoroughly tested truck motor built today. Ask any driver in the motor transport corps what motor stood up best in France and the answer will be "Buda." The records prove it.

CLARK AXLE—
The Clark Internal Gear Axle is the most efficient final drive known. The load-carrying axle has a carrying strength of 120,000 pounds per square inch. The driving axle transmits the power near the rims of the wheels, transmitting 97 per cent of the motor's power at all times into driving energy. Clark axles cost a lot more, but are worth it—for economy, strength and reliability.

Other units of the same high quality:
Fuller clutch and transmission.
Detroit pressed steel frame.
Detroit steel springs.
Prudden wheels—14 spokes 2½ in. square.
Shuler front axle.
Timkin and Hyatt bearings.
Jacox steering gear.
Duplex governor.
Zenith carburetor.
Eisemann magneto.

NELSON MOTOR TRUCK COMPANY
FACTORY AND GENERAL SALES OFFICE: SAGINAW-MICHIGAN

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TRANSPORTATION--THE BIG PROBLEM

By R. E. Fulton, Vice President, International Motor Co.

THE problem of good roads is only one part of a bigger problem—transportation. It is necessary to state this obvious fact for the simple reason that the obvious is usually the last thing we see. The other half of the problem is vehicles, plus their motive power.

Good transportation has resolved itself into two things: Good roads and motor trucks. A favorable sign of the times is the growing recognition on the part of good roads advocates that good roads exist for the use of better transportation media—the motor truck and the automobile.

The motor truck is not only replacing horse transportation, but in many cases it is supplanting railroads. The motor truck is the solution of the modern transportation problem.

In addition to the unlimited use of motor trucks for delivery purposes, they are substituting for railroads where the railroads themselves are using them to replace spurs, which are a source of expense and difficulty. Also in inter-city shipments large truck companies operate transportation service for merchandise, supplies, etc.

An idea of the extent of this form of transportation which is calling for better roads and the best motor trucks is given by the example of Callan Brothers of New York, who operate a motor truck transportation system within a radius of 400 miles of New York City. They have a fleet of over 40 7½-ton Mack trucks. They have closely connected their service with the Erie barge canal which runs from Buffalo on Lake Erie across the State of New York, joining the Hudson river at Troy, a distance of 387 miles.

Link Warehouses.

Callan Brothers have linked their eight large warehouses, with a storage capacity of 900,000 square feet, and their motor truck service with the terminals of the canal in New York City and important upstate trans-shipment points along the canal. The Harlem river ship canal is eight miles long. Callan Brothers unload freight direct from the canal barges at their warehouses alongside their yard for shipment by their large fleet of motor trucks and deliver direct to consignees or to Callan Brothers' warehouses to be held for future delivery in New England, New Jersey, Delaware, Pennsylvania or other seaboard states or to trans-Atlantic piers in New York City.

These motor truck transport systems are the outcome of the inability of the railroads to handle the great quantities of freight which have congested railway traffic in all parts of the country. This condition is responsible for the discovery of the real value of the motor truck as a transportation medium. Motor trucks were used in connecting the broken lines of railroad shipping and are replacing the use of local freight trains on "short hauls" to a considerable extent, thereby releasing freight cars for the more essential shipments on longer hauls.

Shipping freight by motor trucks means less handling, less damage and safer delivery. It eliminates at least five handlings of goods as shipped by railroad: First—from factory or warehouse to freight station; second—loading from freight station or truck to cars; third—unloading at destination from cars to trucks or freight station; fourth—unloading from trucks to stores, factories or warehouses, and fifth—handling in case the goods are removed from the car to freight station and held until the consignee sends a motor truck to remove them.

Practical Distances.

Distances considered practical for motor truck transportation are held by various authorities to average from 100 to 300 miles. In special instances trips of 400 miles have been made. An exceptional demonstration of long distance hauling is the fleet of motor trucks which the Goodyear Tire and Rubber Co. operate between Akron, O., and Boston for the shipment of fabrics and rubber supplies. These machines make the round trip of approximately 1560 miles in from six to nine days, depending on the weather and road conditions. They are driven between terminals with no stops other than for meals and supplies. Each truck is manned with two drivers, one of whom drives while the other sleeps.

The establishing of long distance motor truck service during the emergency of the war is undoubtedly a forerunner of a continuation of such service on an even larger scale in the era of peace. The service is demonstrating to manufacturers and merchants that motor truck transportation is the only way to escape delays caused by slow moving local railroad freight trains and the loss of time that had frequently been experienced even before the railroad freight congestion became so acute.

Department stores in New York City and Philadelphia are extensively patronizing long distance motor truck freight service. This method of transportation insures prompt receipt of goods.

The products carried by motor trucks have hardly any limitations. Recently several tons of finished leather, valued at $40,000, were shipped by motor truck from Philadelphia to New York over night. Railroad service at the same time would have required from four to seven days. Machinery manufacturers and cotton and woolen mills in New England cannot well afford to await the arrival of slow incoming freights, so they have their raw materials delivered to them by motor trucks in express time. Heavy machinery is delivered direct from shops and foundries in Connecticut to factories in New York City. Wholesale grocers deliver in Washington from warehouses in Baltimore. Tons of high explosives that railroads refuse to carry are delivered by motor trucks with but one handling after they leave the chemical works. And so on "ad infinitum."

Trucks for Farmers.

Farmers, too, are turning to motor truck transportation. Thousands of them are now served by motor truck express lines without which they would hardly be able to ship milk or farm produce. This service has enabled them to materially increase their production, with a certainty of reaching the market. In Maryland there are 20 such lines carrying supplies into Baltimore and Washington. They have a daily capacity of 115,690 ton-miles and haul more than 500 tons a day into these markets and take back an equal amount of merchandise to farmers and country merchants. The United States Food Administration states that one man with a truck can haul as much farm produce as three men with wagons and cover three times the distance.

All of this emphasizes in a general way the conditions that have obtained in railroad transportation and explains why industrial and commercial interests are turning more and more from what had been considered "short hauls" to the use of motor trucks for transportation. Business men first turned to motor truck service to meet an emergency; now they are turning to it to insure against interruptions and delays in carrying on their operations.

When counterbalanced by their capacity and more extended distance of travel, the upkeep of motor trucks has proved to be less expensive than the maintenance of horses. One of the big Mack trucks of the Callan fleet has been in the service for four years and it has never had its engine taken down for a general overhauling. It is still in commission carrying its rated capacity load every day.

Truck Schedule.

The following is a schedule of the distances and time made by Callan Brothers' 7½-ton Mack trucks:

	Miles	Hours Per Trip
New York to Philadelphia	100	12
New York to Baltimore	188	22
New York to Dover, Del.	172	21
New York to Waterbury, Conn.	95	11
New York to New Haven, Conn.	77	9
New York to Bridgeport, Conn.	58	8
New York to Hartford, Conn.	113	16
New York to Springfield, Mass.	139	18
New York to Worcester, Mass.	190	23

The foregoing gives a practical insight into the transportation methods of the immediate future. Motor truck transportation has come to stay. The problem now is to perfect and develop it.

Engineers who for years have been engaged in the building of better roads are now including in their efforts the problem of better motor transportation. They realize that good roads are but a means to an end—efficient transportation, the getting of things from where they are to

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where they are needed in the best, quickest and most economical manner.

Within a range of 50 to 100 miles the motor truck is today easily a competitor on better than even terms with the railroads. All that is needed to widen the limits of this zone is the building of smooth, hard surfaced highways of adequate strength. Government recognition has been taken of this fact, and a new government department is to be born out of the stress of the great war. Its purpose will be to create a country wide system of roads that can be used in winter as well as summer. This has the double strategical value of a strictly military measure and of relieving railroads.

Topographical Maps.

It is now proposed that topographical maps be prepared showing our present loosely constructed and unsystematic highways. With these as a basis a plan will be made of an interlocking system of roads, upon which the products of the nation may be moved from coast to coast, and from the Canadian border to the Gulf of Mexico. New and sounder types of roads than heretofore will have to be constructed, having as the first consideration the greatly increased wear and tear of heavy trucks. Even the best of our existing highways are not calculated to withstand continuous traction of heavy duty trucks.

The best engineering brains of the world thrashed out the problem of good construction behind the battle lines in Belgium, France and Italy. An approach to its solution was made when the engineering division of the French army "metaled" the roads behind Verdun in such speedy fashion that heavy tractors top heavy with men, munitions and supplies of all kinds were enabled to pound over those roads day and night, thus giving the Hun a blow that led to his defeat. This lesson of Verdun has awakened highway engineers to the possibilities of auto truck transportation in times of peace as well as war.

The problem of transportation will be solved by good roads engineers and motor truck engineers working in co-operation to achieve the desired end.

TRUCK DELAYS AT CONSIGNEE'S RECEIVING PLACE.

"One of the most serious problems that the fleet truck owner is experiencing is lost time at the consignee's receiving place," says James J. Hunt, general manager of the Reo Motor Car Co. of New York. "The truck, in order to make it a paying investment, must be kept busy at all times. In addition to the customary delays at the invariably congested railroad terminals, the truck driver often times experiences a similar, if not a more protracted, delay at his customer's unloading platform, due to a careless unloading of a previous delivery by some other transporter."

Verne Seger, formerly of the service department of the Republic Motor Truck Co., Inc., Alma, Mich., has associated himself with the Pan Motor Co. of St. Cloud, Minn., as director of service.

Truck Line Superior to Railroads in Northwest

In the 70's Capt. Hugh B. Scott began the operation of a light draft steamer on the Willamette river between Portland and Salem. This was very much a business venture in those days and few persons believed the line would succeed. But it did.

The steamboat line was a success for a time, but the Southern Pacific railroad furnished speedier transportation between these two points which almost wholly replaced the slower steamboats some years later.

However, short haul lines are not profitable to the railroads, and the 55 miles between Portland and Salem is in this short haul class. It is on such hauls that motor trucks are demonstrating their value.

Such a motor truck line, the Highway Rapid Transit, has been in operation several months and, strange to say, E. B. Scott, the son of Capt. H. B. Scott, is the man who first put on a fleet of trucks just as his father first turned to the steamboats.

Three Trucks in Use.

Three Federals are in use, two of 3½ tons and a two-tonner, the heavy trucks making a round trip every 24 hours, thus giving day and night service. The two-tonner makes the round trip only on rush days, being used mostly on pickup and delivery work at Portland. The company contemplates putting on one-tonners at each end for pick-up work, and using the two-tonner on regular schedule.

The freight rate ranges from 30 to 40 cents per 100 pounds. The line has had so much business that five tons have been carried every trip.

The main difficulty just now is some 20 miles of rather rough and mud roads that mean slow going and some delay. This stretch lengthens the time to about nine hours for the 55-mile trip one way. However considering all necessary stops, this 110 miles every 24 hours is very good time.

When the character of the country through which the line passes is understood, the value of the service is even more apparent. The entire route over the Pacific highway is well settled, most of the land being fertile agricultural land. From these farms milk, butter, eggs, poultry, veal, hogs and vegetables are sent into market. The night truck brings in most of the farm products, arriving at best time to market such produce and bringing it in better condition.

The line has increased the production of farm produce by furnishing better marketing facilities. It enables the farmer to dispose of small lots of produce, milk or eggs, which otherwise would never reach the market. This increases the farmer's output and profits and because of added supply will tend to reduce prices to consumer. The line also cuts out middlemen, as the farmer can send direct to the market. This is indeed a practical application of the principles of the rural motor express as advocated by the Highways Transport Committee.

Through Three Counties.

The line passes through three counties, with stops at Portland and Fulton in Multinomah county; Clackamas, Oregon City, New Era, Canby and Aurora in Clackamas county; Hubbard, Woodburn, Gervais, Brooks, Chemawa and Salem in Marion county, and many intermediate points as well as farms.

Two other important advantages of truck lines such as this is, store door delivery and "better than express" service. The first means no delay in receiving the shipment, as it will be delivered at door rather than relayed from train to depot, time taken to check lists and extra time for delivery.

The "better than express" service means that the merchant can carry less stock, reducing his investment and increasing the turnover. The merchant can order by phone one day and get his goods the next morning, as it will be sent by night truck. All produce secured by these merchants can also be disposed of quickly and direct to the market.

The flexible, speedy motor truck line with these advantages is giving new life to the small towns, villages and farming communities.

Times have changed since Capt. Scott first ventured to operate a steamboat line on the Willamette. Since the 70's the world has speeded up production which makes essential rapid, dependable transportation.

The motor truck has reached that stage which marks it a dependable medium for the development of the resources of farm, forest, mine and ranch, providing rapid transportation of raw material and supplies, to and from the outlying districts.

CONTINENTAL GUARANTY CORPORATION DECLARES DIVIDEND.

The board of directors of the Continetal Guaranty Corporation on April 28 declared a dividend for the quarter ended March 31 of two per cent on the capital stock of the corporation, payable May 2, 1919, to stockholders at the close of business on April 29, 1919.

Announcement has been made that the $1,000,000 additional capital stock recently authorized has been entirely subscribed and such additional cash capital will be available for use May 1, 1919.

EXTENSIVE SUBURBAN DELIVERY ROUTES.

Crowley-Milner & Co., Detroit, Mich., has now in operation six suburban delivery routes. One line delivers to Mount Clemens and Utica; the second to Troy and Rochester; a third to Royal Oak, Birmingham and Pontiac; a fourth to Schoolcraft, Redford, Farmington and Northville; a fifth to Dearborn, Inkster, Eloise, Wayne and Plymouth; the sixth to Ford City, Wyandotte, Sibley and Trenton. These lines are served by a big fleet of Federal trucks.

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PLATE XXXIV.

SALES AND SERVICE STATION

A Two-Story Fire Proof Structure, 60 by 120 Feet, with Large Truck Department and Provision for Storage and Work Shop Facilities.

THE accompanying design shows a two-story structure, of fireproof construction, size 60 by 120 feet. The first floor is for motor trucks, with repair and storage departments. This floor also contains an office, with staircase leading from it to the second floor. Opposite to the office and divided by an entrance from the main street will be found a space that can be used either for a show room or a sales room for automobile parts and accessories. In event it is used for a show room a large door should be provided to permit placing of cars into the space, as shown.

The storage and general repair department for the trucks take up two-thirds of the entire floor area, thus allowing the management to handle a large number of trucks. A large door on the side street or court adds to the ease in handling the trucks, from a storage standpoint.

At the rear of the first floor a repair shop and a machine shop are located, also an elevator for hoisting passenger cars to the second floor, which is devoted exclusively to them. The repair and machine shops are adequate to handle work almost of any nature that a station of this type might be expected to do. In many cases a specialization on one particular car is adhered to, as this naturally develops efficiency and increases the quality of workmanship. It also permits the company to install machinery especially suited to its needs.

The second floor, assigned to passenger cars, is given over to their repair and storage. This floor is reached by two staircases and one elevator for cars. In the front end, directly over the show room and office, will be found a women's room and toilet. Adjoining this is a large stock room, where parts can be kept on hand.

At the rear of the second floor there is a toilet and a wash room, being ample in size for a force necessary to operate a station of this size. Lockers will be found just outside of the wash room.

The question of construction is a very important one. Owing to the great variance of building laws of different states and cities, and numerous fire ordinances that govern the erection of a building of this type, the best that can be done here is to analyze in a general way what the building is made of, or rather what is proposed regarding it.

The sub-structure or foundation, as in all good buildings, should be of concrete of the very best quality. This being a detail that many do not well consider, allowing only about half the volume of good material necessary for a first class job.

A glance at the elevation shows one the principle of the foundation line, this being shown in a broken line effect, having a spread footing. Owing to excessive loads that arise in this type of a structure, and the amount of live load placed therein, something more rigid is required than under ordinary circumstances. The method shown insures against settlement of an unequal nature. The size of such a footing is governed by the load placed on it, and the bearing pressure of the soil on which it is built.

A mixture that will be found extremely satisfactory for mass concrete work under most any condition is one part Portland cement, three parts clean coarse sand and five parts crushed stone. For other conditions a 1-2-4 mixture may be used.

The floor construction is of reinforced concrete, also the columns, the standard formula being used in connection with this construction. City building laws must also be taken into consideration. All walls are of brick except the outside walls, which are of terra cotta, backed with brick.

The concrete foundation is allowed to project above the ground to form the base course of the building. This is finished off to resemble concrete stone. The windows have steel sash, cut into small panes so that windows when broken may be easily and economically replaced.

The general equipment, of a fireproof nature, complying with the laws of the city property board or the building inspector.

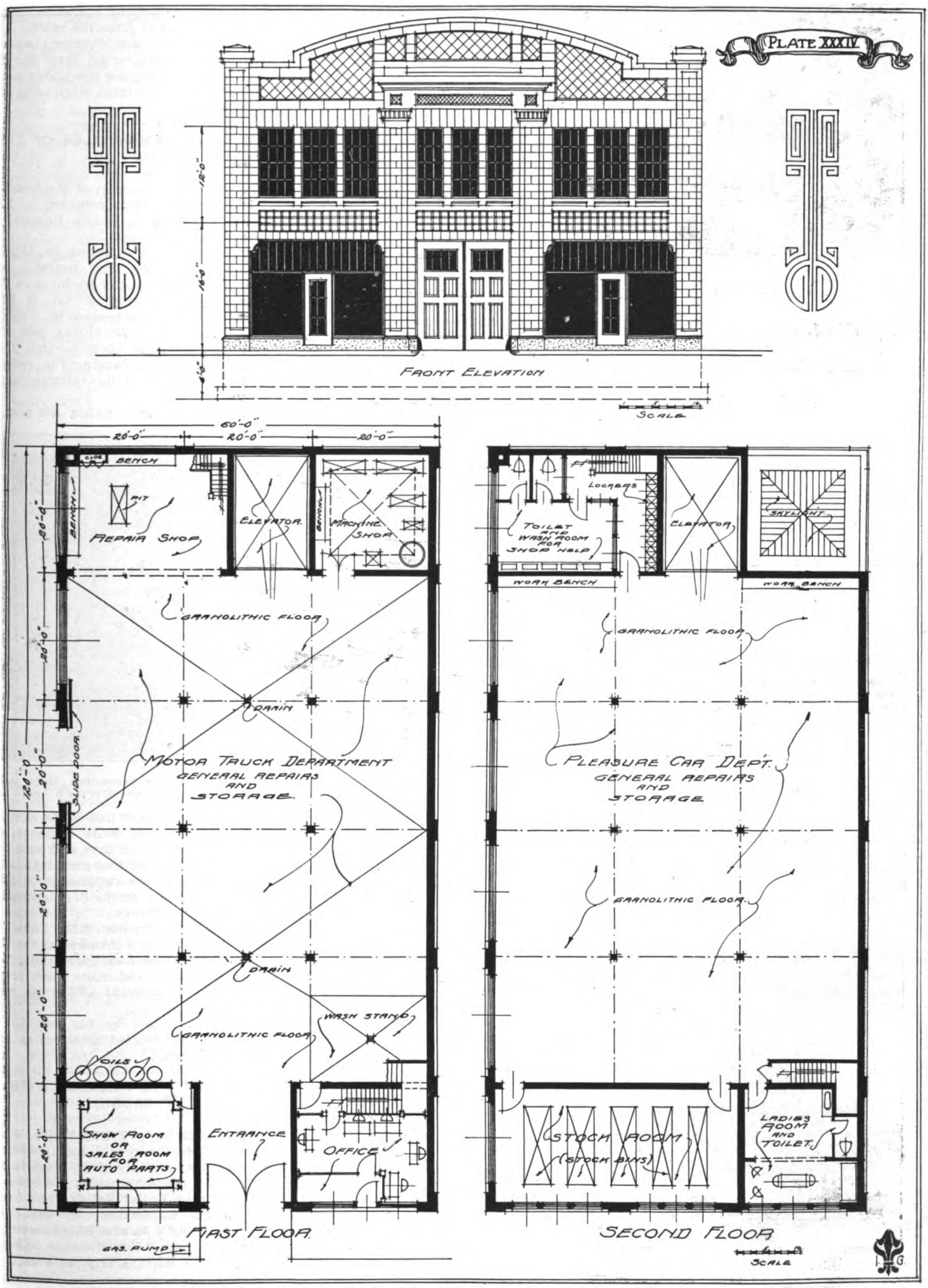
A large sliding door, automatically operated, leads from the side street, while the door in front is of the swinging type, made of wood unless otherwise demanded, while the sliding door is just a plain, simple door, covered with metal to make it fire resisting.

Heating is by steam, or as the owner desires. The boiler room is located underneath the repair shop, with stairs leading from the same down to the boiler room.

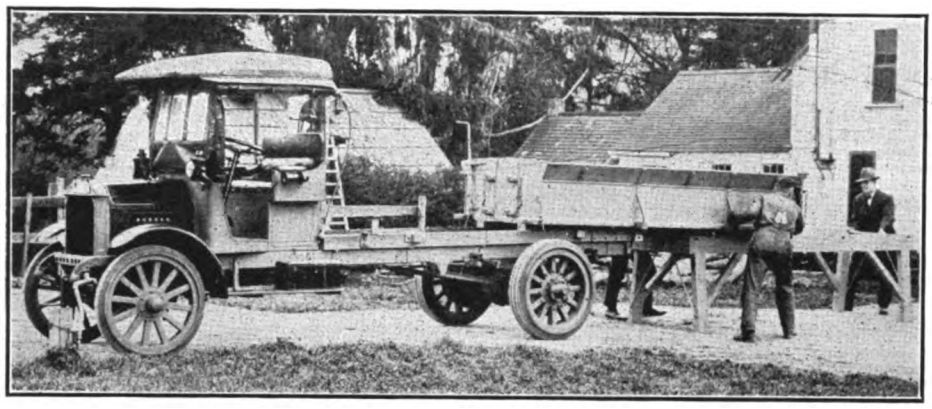
This sketch has been finished with a view of giving prospective builders of such a service station ideas that he might desire to incorporate in his structure, and any further information desired relative to the cost of this structure or any special feature will be gladly furnished upon application to the Architectural Department of this publication.

Regarding the cost of the structure the estimate is approximately $30,000. This amount would be sufficient in most cities, while in some places the cost might be less.

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Rolling the Body from the Chassis to a Special Stand, a Work That Can Be Done by Two Men Without Hoist or Special Application of Power.

Demountable Power Hoisting Dump Truck Body

The truck shown in the accompanying illustration was recently built by the Federal Motor Truck Co. and delivered to Chas. S. Wheeler for use on his estate at McCloud, Cal. This vehicle is equipped with a combination body with which it is adapted for a number of different kinds of work. The design called for by the purchaser was a combination express dump body, which was to be removable, so that the flat bed of the truck could be used for hauling large or cumbersome commodities upon the estate of the owner.

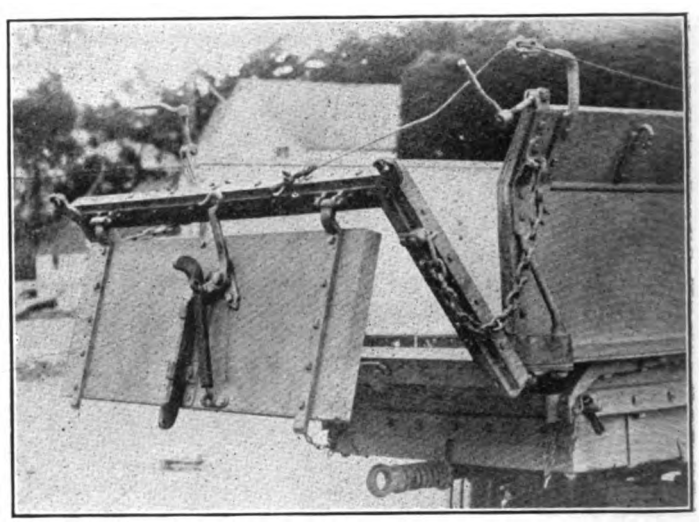
The express body is equipped with a drop tail gate and is steel lined and constructed to be leak proof. This body is a handy medium for conveying loose material such as sand, gravel and the like, or for the purpose of hauling merchandise. The body is so constructed that during a demonstration recently given it was removed from the chassis and rolled upon a special built receiving stand in less than four minutes, the frame of the truck being equipped with rollers so that the body can easily be slid off the truck chassis onto the stand, as shown, by two men.

When the body has been removed from the truck chassis the specially constructed flat bed can be used to haul logs or other articles that would be difficult to handle otherwise. The bed is equipped with rollers and skid sockets on either side and at the rear end so that heavy material may be rolled or skidded to any desired position on the truck. The very heavy material, such as logs, are automatically lifted or drawn into place on the truck by its own motive power through the use of the hoist cables operating from the engine.

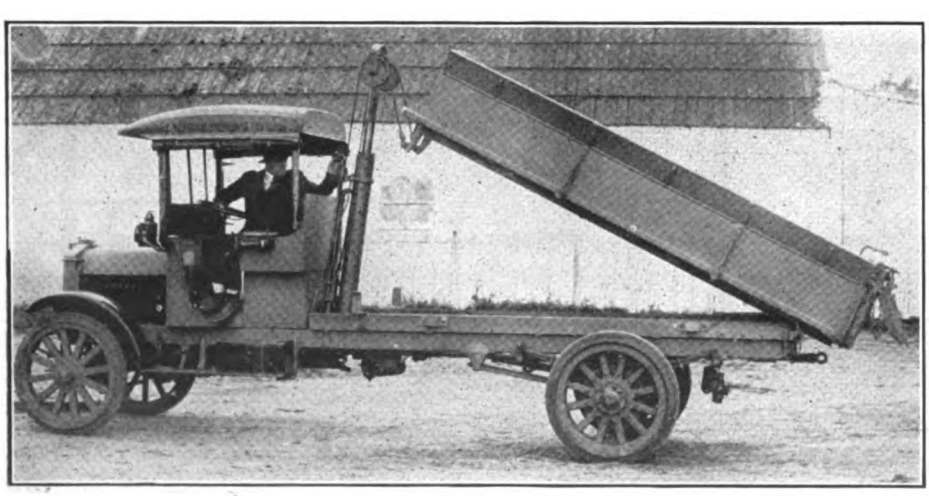
The truck can also be used for road work, being equipped with a special hydraulic hoist for raising the dump body as shown, permitting loose material used for road work to be easily slid out of the body and spread.

Inside the drop tail gate is built another gate that is used for spreading when the body is elevated for dumping purposes. This inner gate is operated by means of a wire cable from the driver's seat, the cable fitting into the hook shown in the center of the gate. A heavy spring keeps the eye of the cable and the hook in contact so that any vibration caused by the dumping operation cannot jolt the hook away from the cable.

This truck is also equipped with a specially designed spring draw bar for tractor use, eliminating the undue shock and stress upon the truck when used with a trailer.



The Double-Acting Tail Gate, with the Spreading Gate Open, Showing the Means of Control from the Driver's Seat.



The Regular Rear End Discharge Body Installed on the Chassis and Coupled to the Hydraulic Hoist, Elevated to a 30-Degree Angle.

DEATH OF JAMES VILES OF THE BUDA CO.

James Viles, chairman of the board of directors of the Buda company of Harvey, Ill., died in St. Luke's Hospital on Sunday evening, April 27.

Mr. Viles was born March 10, 1855, in Boston, Mass. His first business venture was in the packing business in Chicago with Underwood & Co. in 1878, which firm was succeeded by Viles & Robbins, of which Mr. Viles was the senior partner. He then became president of the Omaha Packing Co., retiring in 1902 to engage in the railway supply business.

Mr. Viles' interest during the past 15 years has principally had to do with the management of the Buda company, the greater part of which time and until January of this year he was president, when due to ill health he resigned such office and assumed the duties of chairman of the board of directors.

He was also a trustee of the Lake Forest University and a member of the Chicago Club, Saddle and Cycle Club, New York Whist Club and many other organizations. His political affiliations were Republican.

He is succeeded by his son, L. M. Viles, who was elected president on Jan. 25 of this year.

RECORD APPLE HAULING WITH A TRUCK.

A. E. Anderson of Entiat Valley, Washington, holds the record for apple haul ing. With a two-ton Federal truck in one night of 10 hours he hauled 936 boxes of apples to the Entiat Valley Fruit Growers' League warehouse. He made six trips, carrying a total of 37,440 pounds, or over 18½ tons. The distance traveled averaged 12 miles a trip, or a total of 72 miles.

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SAYS "WAR BABIES" MUST MAKE GOOD.

"Now that the war is over the motor truck industry is going to see a flood of ideas proposed for regular truck usage, simply on the merit of what they did during the war," states the Russel Magazine, the official organ of the Russel Motor Axle Co. "There may be merit in many of these new products. But one great factor must be borne in mind.

"The government had only one object in view when it adopted equipment for war service. The one object was solely efficiency. Efficiency was everything. It could not be measured in dollars and cents—only in human lives.

"There could be no serious thought of economy. True, costs were held down, but only after efficiency was firmly established. And the result was that, of course, the majority of the equipment for war service was extremely extravagant when considered from the standpoint of the ordinary truck owner.

"To say that a certain product was efficient in war work does not at all prove that it is as ideal for peace-time service. The ordinary truck owner has not the resources available that Uncle Sam could utilize in waging war.

"Therefore, before any 'war baby' is adopted because of its war record it should also be made to show other points of value, particularly economy and every day practicability."

FREIGHT SERVICE ORGANIZED IN PORTLAND, ORE.

The Highway Rapid Transit Co. of Portland, Ore., has been organized for the purpose of maintaining a freight service between Portland and Salem. This route is 55 miles one way, most of the line following the Willamette valley and passing through a number of small towns, among which are Oregon City, New Era, Canby, Aurora, Hubbard, Woodburn, Gervais, Brooks and Chemawa. The rates vary from 30 to 40 cents a 100 pounds. Three Federal trucks are in use, two of 3½-ton capacity, making a round trip each 24 hours, thus giving day and night service; the other, a two-ton, which is used on pick-up and delivery service in Portland. Plans are under way to add one-ton trucks at each end of the line for this service, thus putting the two vehicles on regular schedule.

SERVICE MOTOR TRUCK SALESMEN CONVENE.

More than 100 salesmen of the Service Motor Truck Co. attended a convention in Wabash, Ind. The convention was opened with a minstrel show by the employees of the company at a theater. F. E. Place, general manager of the Buda Motor Co.; F. C. Gilbert, vice president of the Timken Detroit Axle Co., and Moie Cook, general manager of the Service company, spoke. The salesmen were transported between the convention hall and the factory in government trucks. The convention was closed with a banquet in the dining room at the factory.

Clearing House for Sale of Repaired Used Trucks

A movement which should prove both interesting and valuable to the motor truck industry was recently inaugurated at a meeting of several prominent dealers of power trucks held at the Automobile Club of America in New York City, where it was decided to organize the Metropolitan Motor Truck Exchange.

The tentative plans have been worked out carefully by a committee of experts, and the proposition was so well received at the conference that practically $20,000 was subscribed. The capital will be $50,000 and it is expected that this will be taken up in a very short time and papers of incorporation will then be filed at Albany.

Briefly, the object of the exchange is to act as a clearing house for used trucks. Any one having a truck to sell can apply at the exchange, which will employ an expert appraiser to fix a reasonable price. This price will be such as will make it possible to give a vehicle a thorough overhauling, which will include repainting and complete engine repairing, and then to resell it, giving the buyer assurance of satisfactory performance.

Under present conditions many used trucks are purchased which are faulty either in operation or some parts of the vehicle. This affects either directly or indirectly the reputation of the particular make of truck whose condition has been misrepresented.

The value of a clearing house can be appreciated when it is remembered that the increasing use of power trucks for various purposes has created a large market for used machines. This situation will continue to increase and the two fold purpose of the new organization is to stabilize prices and offer second-hand trucks in a state of good repair.

To provide proper facilities for the purchase and repair of trucks it is proposed to lease at least 25,000 square feet of space in Manhattan or Long Island City as the general service station of the exchange. The annual expense according to conservative calculation will be approximately $100,000, but the projectors state that estimates furnished by truck dealers whose judgment is based upon successful experience in the New York market, place the sales to be handled by the exchange during the first year at over $500,000.

Membership in the exchange will be limited to members of the Motor Truck Association of America, and each member must own at least five and not more than 25 shares, the share value being placed at $100.

One condition will be obviated by the organization, which is an outcome of taking old trucks in part payment for new ones, namely, in order to increase their individual sales, dealers very often make excessive allowances on used trucks and then to dispose of the machines quickly will sell them at an actual loss. In many cases these trucks are not properly repaired and before the buyer can obtain efficient service he must incur further expense, which he must assume in consideration of the low first price paid for the vehicle. As can be easily seen this system causes considerable dissatisfaction, as the purchaser of a used truck is never sure whether he is getting a fair proposition or making a loosing deal. The used truck exchange will remove this cause for dissatisfaction as a reasonable value will be fixed to the vehicle, which will be put into proper operating condition, so that both the seller and buyer will be protected and at the same time the exchange will make a fair profit on the resale of the used trucks which it purchases at an appraised value.

SEVEN TRUCKS ARE OPERATED BY COUNTY.

In the early fall of 1916 La Porte county, Indiana, purchased one two-ton Acme truck. This truck was put to work in road making, repairing, etc., and it proved to be such a splendid worker that in March of the following year another Acme truck was purchased. Two months later the third and fourth were added, but all of this time the first and second trucks were making such a splendid record and the third and fourth Acmes added to the score until in October of the same year the fifth truck was purchased. These were all two-tonners.

A few weeks ago this progressive county added the seventh truck to the already splendid line, the sixth one having been purchased during the summer, the two latter being 3½-tonners.

TORBENSEN CO. ELECTS EATON PRESIDENT.

At a directors' meeting of the Torbensen Axle Co., held April 2, some changes were made in the officials of the company. The list of officers is now as follows: Chairman of the board, V. V. Torbensen; president, J. O. Eaton; vice presidents, W. J. Baxter, C. F. Hepburn; treasurer, F. A. Buchda; secretary, A. H. Ide; assistant secretary, R. C. Hyatt; comptroller, M. M. Risberg.

LANCE CO. OPENS DISTRIBUTING HOUSE.

The Lance Motor Car Co., 8th and Franklin streets, Reading, Pa., one of the oldest exclusively truck merchandisers in Pennsylvania, has opened a distributing house at 7 South 22nd street, Philadelphia. It will handle Commerce trucks in both cities. The firm name has been changed to the Lance Motor Truck company.

DOHERTY JOINS THE KLEINHANS COMPANY.

John Doherty, formerly president of the Acason Sales Co., Philadelphia, has formed an association with the H. Kleinhans Co., Pittsburgh, and will have charge of the Acason truck sales of this company's business.

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WELHENER AND MAHON JOIN GMC TRUCK ORGANIZATION.

Announcement is made by the General Motors Truck Co. of the appointment of Paul Welhener and W. L. Mahon to positions in the sales department.

Mr. Welhener was for more than 10 years associated with the Emerson-Brantingham Co. at Kansas City and for several years held the position of manager of the order and traffic department. In June, 1918, he entered the Central Officers' Training School at Camp Pike, Arkansas, where he was on duty at the time he was discharged from the service.

Mr. Welhener is well known in Kansas City, having lived there practically all his life. He will make his headquarters at the home offices of the General Motors Truck Co., Pontiac, Mich.

Mr. Mahon is a graduate of the University of Michigan, class of 1913. Immediately after his graduation he entered the factories of the General Motors Truck Co. to learn the business. He later enlisted in the aviation section of the Signal Corps and after completing the training course was commissioned in May, 1918, a lieutenant and served as pursuit pilot.

Early in January he was discharged from service, having been stationed at several flying fields. In his association with the General Motors Truck Co. Mr. Mahon will have charge of the department of research and statistics.

The plan, it is stated, is under the supervision of Mr. Mahon to develop a department which will be of great value to the sales force as well as dealers and distributors throughout the country.

F. H. PRESCOTT JOINS REMY CO.

The Remy Electric Co. has added to its staff F. H. Prescott as designing engineer on motor and generator equipment. Mr. Prescott is a graduate of the Michigan Agricultural College, class of 1915.

He was a designing engineer in the automobile equipment section of the Westinghouse Electric and Manufacturing Co., with which he was connected for about two years, when he was called to the service in December, 1917, as second lieutenant, Engineering Reserve Corps. He was with the production division of the General Engineering Depot throughout the war, being promoted to first lieutenant of engineers in August, 1918. Most of his work was in connection with the production and inspection of 60-inch and 36-inch searchlights used by the mobile army and the coast artillery corps.

HELLER CO. OPENS NEW QUARTERS.

The Heller Sales Co., dealer in Commerce trucks at Wapwollepen, Pa., has opened another place of business in Wilkes-Barre at 24 North Main street. The company will retain its Wapwollepen place and operate sales and service station in both Wapwollepen and Wilkes-Barre. Wapwollepen has a population of less than 300, but the Heller Sales Co. has sold over 100 Commerce trucks in this territory.

IHC Earnings Show a Gain Over 1917 Despite Loss

The annual report of the International Harvester Co. for the year 1918 shows that during the year the company earned $14,985,000, as against the combined earnings of the two companies which constituted this organization in 1917 of $12,659,000. The earnings last year after deducting $4,200,000 paid out in dividends on the preferred stock, were equivalent to $13.48 a share on the 800,000 shares of common stock. The company charged off $10,478,000 as depreciation of its assets in Russia. In the previous year $13,727,000 was thus charged off, making a total deduction on this account of $24,205,000 in two years.

Gross income of the company amounted to $31,648,856, after providing for taxes, against which charges for interest on loans, plant depreciation and other maintenance items totaled $6,185,531, leaving $25,463,325 before the Russian depreciation charge. The surplus account, which stood at $61,051,337 at the end of 1917, was increased at the end of last year to $68,036,662.

Balance Sheet.

The balance sheet at the close of business last year showed total assets and liabilities of $283,218,991. Plant is carried at $65,694.250 net; deferred charges and reserve fund assets at $2,594,884, and current assets at $214,929,857. On the liability side of the account the chief item is that of capital stock, $140,000,000; current liabilities are placed at $48,502,911, and reserves at $26,679,417. The surplus is $68,036,662.

Inventories carried over to 1919, amounting to more than $113,000,000, were abnormally large, and, as explained in the report, were due partly to the attempt to meet the demands of the government's war program, partly to the high costs of raw materials and labor, and partly to "continued dullness in the implement trade, due to the belief that prices of materials and labor would soon recede after the cessation of hostilities, a belief not yet realized."

The report further says:

"The basic eight-hour day was made effective during the year at all American plants. There were also two general wage increases, which with those previously made make the present average hourly earnings 100 per cent. above those of 1914.

Export Trade.

"The export trade was fairly satisfactory, considering the scarcity of shipping space and the demoralization in Europe, especially in Russia. The French factory at Croix, near Lille, is being re-equipped, having been stripped of machinery and materials during four years in German hands. The factory at Neuss, Germany, on the west bank of the Rhine, is now under the jurisdiction of the allied army of occupation.

"The Russian factory at Lubertzy, near Moscow, was still running at last reports under the management of the company's Russian representatives, nearly all the American employees having been forced to leave the country by the end of 1918. Most of the Russian branch houses have been closed, but a few are still operating under the management of American employees. The directors especially commend the courage and fidelity of the company's Russian organization in the face of great hardship and peril.

"Russia's deepening disorder compelled further revaluation of Harvester assets there. For that purpose $10,478,000 was charged off against the year's earnings, making the total depreciation to the end of 1918 $24,205,000. This leaves a Russian investment in plant properties, equipment and inventories valued at $4,750,000 and 90,000,000 of paper rubles in bank credits, worth $4,000,000 in gold at normal exchange, but now carried on the books at $16,600,000."

SPRING MEETING OF THE A. S. M. E.

The spring meeting of the American Society of Mechanical Engineers will be held at the Statler Hotel, Detroit, Mich., June 16 to 19 inclusive.

On Monday, June 16, meetings will be held to discuss the aims and organization of the society. Tuesday, June 17, at the morning session several papers and reports will be presented on the subject of industrial research. This meeting will be under the auspices of the research committee of the society. The afternoon session will be on the subject of industrial relations, with several addresses by men of national reputation.

Wednesday, June 18, the session will be in charge of the Detroit local committee and of several of the other sections of the society. At this meeting technical papers will be presented by members of these various sections. At the gas power session papers will be given on the subject of oil engines. At the closing session, Thursday, June 19, there will be held miscellaneous technical sessions, one of which being for the discussion of fuels, including powdered fuel and oil fuel.

The Detroit local committee is arranging many events for the entertainment of the members of the society and others who may attend. Among those will be an afternoon and evening devoted to a boat ride on the lake, during which dinner will be served.

SHELDON COMPANY EMPLOYEES BANQUET.

The management of the Sheldon Axle and Spring Co., Wilkes-Barre, Pa., tendered a banquet to its employees at the Hotel Redington, April 23.

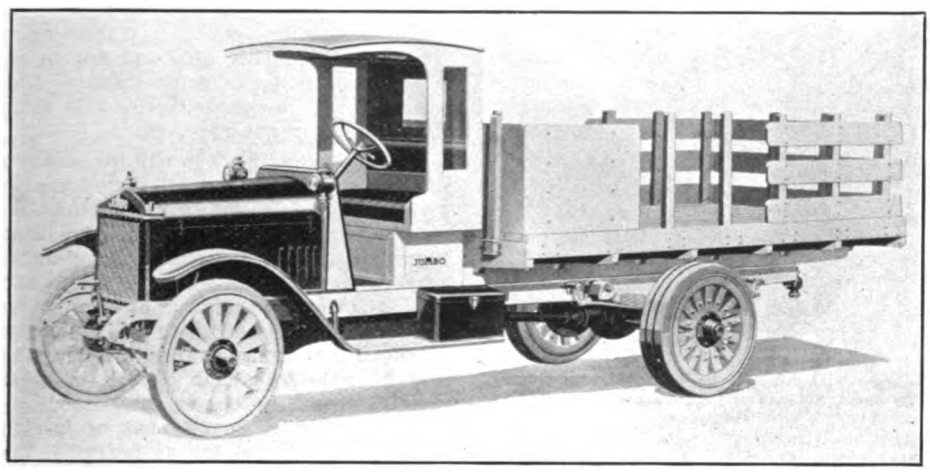
The menu was elaborate and music was furnished by the Sheldon orchestra and the Sheldon Choral Society, both of which are a credit, not only to the company, but to the community as well.

Addresses were made by Thomas J. Atherton, president; George M. Wall, vice president and general manager, and also by several of the directors and other officials, all of whom were greeted with great enthusiasm.

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BIG EXPORTER JUMBO DISTRIBUTOR

John Simmons Co. Makes Contract, First of Kind for Industry, for Large Domestic and All Foreign Sales—Two New Trucks, 1½ and 3½-Tons, July 1



Jumbo Two-Ton Truck Chassis, Equipped with Platform Body and Rack Sides and Cab, a Complete Unit.

WHEN the manufacturing plan of the Nelson Motor Truck Co., Saginaw, Mich., was determined the purpose was to standardize and build a single design unit, the object being to minimize production cost so far as this was practicable, yet to produce machines of high quality. The design was carefully developed, for the intention was to perfect what would be as near finality as scientific engineering could build and continue this until service experience justified changes.

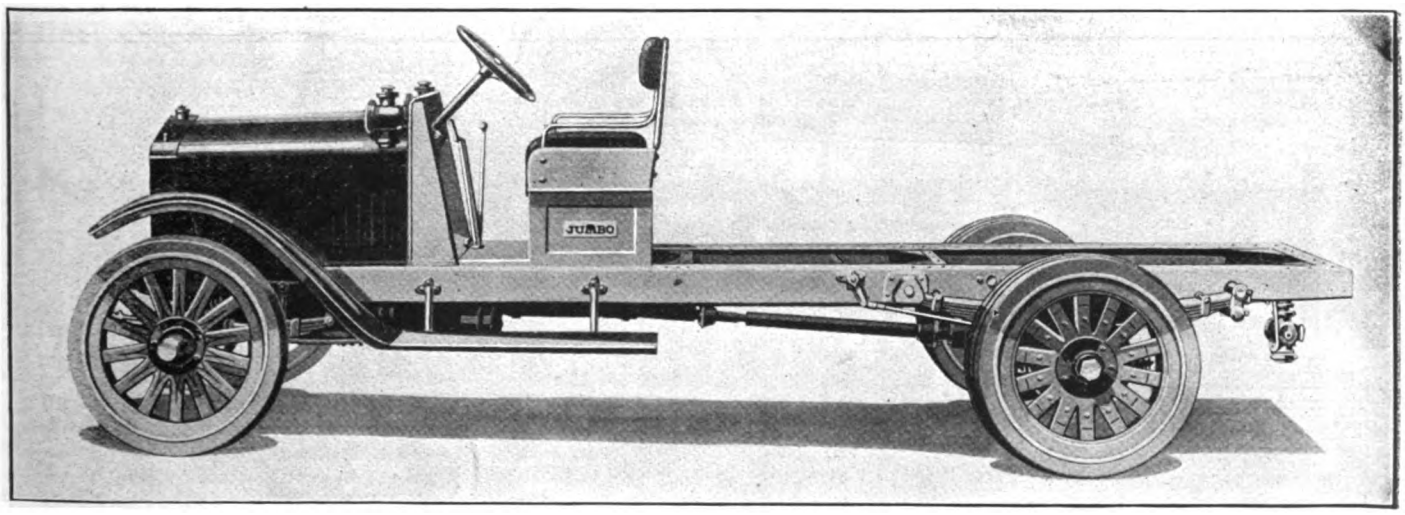
So far as the original construction policy of the company is concerned there has been no change, but the demand for Jumbo trucks has been such that the company has determined to build two additional sizes, which will be to the standardized design, the dimensions of the construction units varying to afford the different capacities. The standard Jumbo truck first built was rated at 4000 pounds load capacity, and now statement is authorized that the company will begin about July 1 production of 1½ and 3½-ton chassis, which will complete the series.

The company first purposed to sell its trucks wholly in the domestic market, but in the development of its sales organization an association was made which is the first of the kind in the history of the American automotive industry and which is expected to create an export trade that has seemingly almost unlimited possibilities. This is an alliance with the John Simmons Co., 110 Centre street, New York City, a concern that has for more than 40 years engaged in wholesale distribution and exportation of machinery, heavy hardware, plumbers' supplies, pipe fittings, etc., that decided to engage in the trade on a very large scale.

The John Simmons Co. has sales affiliations in practically all of the principal countries of the world. Its trade relations are with concerns in many of the commercial centers of Europe (including those of the British Isles, Norway, Sweden, Denmark), Asia, Australia, the West Indies, Cuba, Central America and South America—in fact in nearly all nations where what are known as foreign markets exist. Besides this the company is known in almost every community in the eastern section of the United States. The concern is rated high commercially and statement is made that it has an actual investment in its business of more than $5,000,000.

The sales organization has been developed soundly. The products handled are staples. Business connections have been established through demand and development by sales agents, and these are a character that afford thoroughly satisfactory representation. The company's trade expansion has not been forced with the object of effecting a sales organization quickly, but has been impelled by demand, often in keenest competition, for products that have quality and value as measured by the recognized market standards. This applies especially to exports.

Because of these long established trade relations the export department has developed to large proportions, its executive has knowledge of requirements for commercial transactions, such as transportation routes and their facilities for shipping, packing and crating, essential protection (insurance, etc.), freight rates, customs duties, customs regulations and the business policies or methods essential to meet the competition of other nations. The company has established trade with principals and through these with other concerns that deal with or through them, so that business transactions are not limited to one or several firms in a given country, but to the contrary are developed to afford the same manner of continuous distribution that obtains in the United States, the volume depending upon the activities of its representatives.



Side View of the Jumbo Two-Ton Chassis, with Standard Equipment, the First Type of Truck Unit Produced by the Nelson Motor Truck Co., Saginaw, Mich.

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Value of Established Export Trade.

Such an organization has been created and represents years of exploitation and careful administration. It cannot be paralleled save at large cost and much time would be necessary to establish reputation and coordinate interests. For this reason an export organization thoroughly established is an extremely valuable asset, and this value is the more accentuated because of the endeavor that will be made for the development of foreign markets.

The contract with the John Simmons Co. makes it the sales agent of the Nelson Motor Truck Co., in the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, northern half of New Jersey and the eastern half of Pennsylvania, in addition to its export division. In point of territory controlled this is one of the largest in the country.

Contract Based on Own Service.

The affiliation of the two concerns resulted from the realization of the John Simmons Co., of the foreign truck market, which it had carefully investigated and the demand existing for Jumbo trucks, which the company had exported in a limited way for rather more than a year. The company was quite as certain of the quality of the machines as it was of the trade possibilities abroad, and it reached determination by the use of trucks in its own service, making careful comparison of records to establish essential factors.

There were two reasons for this care in establishing service information. The one is that the manufacturer of Jumbo trucks guarantees the machines for one year, and the John Simmons Co., once it made contract and engaged in distributing them, intended to assume full responsibility for this guarantee for its domestic and foreign sales.

Sales Organization Is Established.

The John Simmons Co. has completed its sales organization for its truck department and made contract for the establishment of a very large service station at Long Island City. The domestic truck sales manager is George V. Lyons, and he will operate with the manager of the export department for the foreign distribution. The service station will be a two-story structure of large proportions that will have a spur track into it, so that receiving and shipping facilities will be such that there should be no delays.



George V. Lyons, Domestic Sales Manager, the John Simmons Co., Jumbo Truck Distributor.

The company plans to have a sufficient number of chassis at Long Island City to meet all demands for domestic and foreign sales, so that orders may be filled immediately, and the service station will have a stock of parts of all construction units sufficient to fill orders of any proportions. The service plan has been worked out differently than that the vogue with other truck manufacturers or distributors. In the event of failure or damage of any unit a complete assembly will be sent from the service station to the owner, which can be installed and the unserviceable unit returned to the station for estoration. When repair has been made by expert mechanics to factory standard the unit will be returned to the owner and the components temporarily used will be removed and returned to the station.

Service Policy One of Economy.

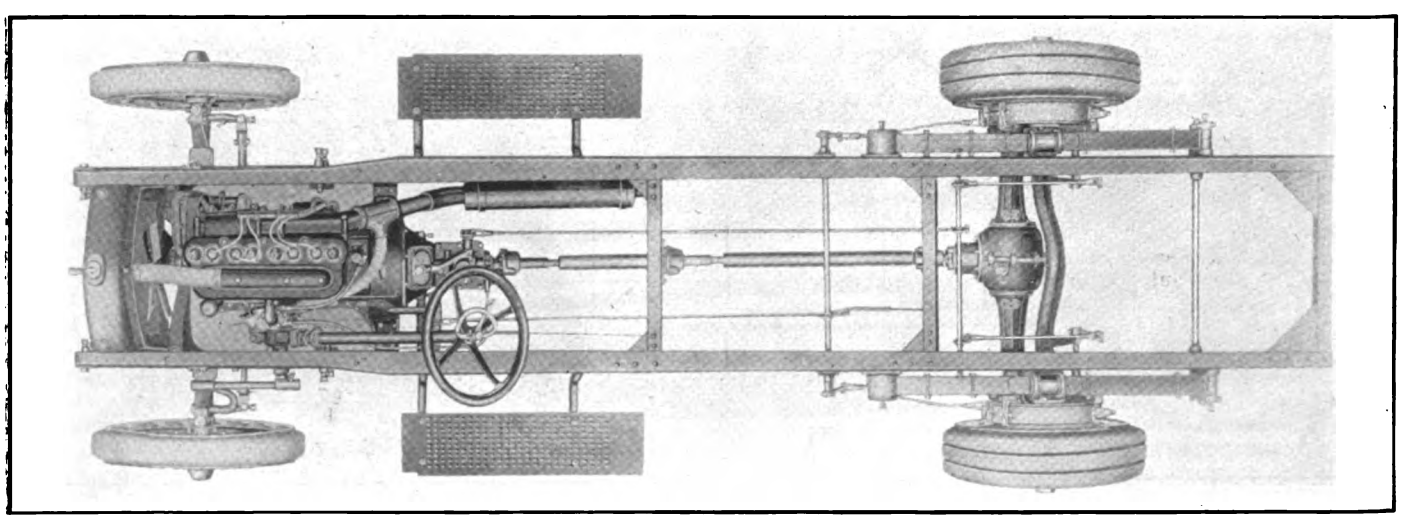
Statement is made that this will reduce the labor to be paid for by the owner to minimum, the repair will be thorough and at least practical cost, and the truck will be out of service a small part of the time as compared with owners doing the work. As the exchange of units will be made through agents for the trucks the interests of owners, dealers, distributors and manufacturer will be amply protected. This policy, of course, applies to work on engines, clutches, transmission gearsets, rear axles, etc., and not to adjustments or external replacements. The purpose is to make deliveries the same day the orders are received.

The sales organization will include two district managers, who will direct the activities of the dealers in the sections assigned to them, and the agencies will be placed in commercial centers, preferably with those who have service stations and the facilities for serving owners. The sales organization will be made up so far as possible of transportation experts, who will be able to advise buyers of what equpiment will best meet their needs.

The service to be afforded in foreign markets will be so far as practical the same as in the United States, but the stocks of construction units and parts will be maintained by the principal representatives of the company, who in turn will distribute these to dealers and through them to owners. The main object will be organization that will quickly and efficiently serve truck users, and service will be quite as essential to the sale of trucks in foreign markets as in this country. The one-year guarantee of Jumbo chassis will necessitate making provision for whatever may eventuate in service, and the positive insurance of it will be maintenance of stocks of parts wherever there are centers of distribution abroad.

Domestic Sales Manager George V. Lyons.

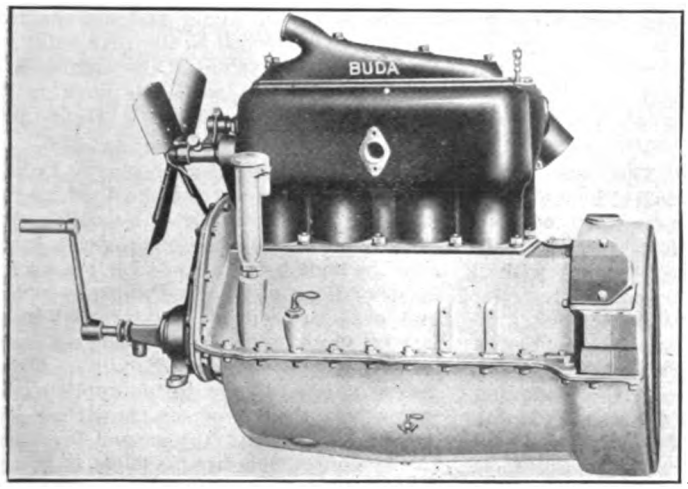
The domestic sales department is directed by George V. Lyons, who has been actively engaged in the power vehicle trade for 10 years. He is a native of New York and his first connection with the industry was with the New York City branch of the H. H. Franklin Manufacturing Co., and later he was associated



Plan View of the Jumbo Two-Ton Truck Chassis, Constructed of High Grade Units, with Clark Internal Gear Driven Rear Axle, the Standard Design of the Nelson Motor Truck Co.

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with the New York branch of the American Locomotive Co. In 1913 he established the New York branch for the King Motor Car Co., of which Artemus Ward was the active head. The summer of



Left Side of the Model HU Buda Engine of the Unit Power Plant of Jumbo Two-Ton Trucks.

the same year he was engaged by the Los Angeles Alco Motor Sales Co., Los Angels, Cal., to take charge of its extensive Alco business in southern California.

When the American Locomotive Co., discontinued the production of cars and trucks Mr. Lyons joined the Moreland Motor Truck Co., which is one of the largest concerns of the industry on the Pacific coast, and became manager of the San Francisco branch. He remained with the Moreland company until 1915, when he returned to New York and became associated with the Garford Motor Truck Co., through the New York distributor for that concern. This connection was continued until Mr. Lyons resigned to assume charge of the John Simmons company's department.

Nelson Production Facilities.

The Nelson Motor Truck Co., which builds Jumbo trucks, was organized after decision had been reached by the members of the Nelson Brothers Co., Saginaw, Mich., to engage in the industry. The Nelson Brothers Co., manufacturer of stationary engines and pump jacks, was developed from a very small enterprise to a very large one, operating an extensive plant and distributing its products in all parts of the world. All of the preliminary work, the engineering experiments and the tests of various designs, was carried on by this concern and when determination of a standard design was made the truck company was formed and a temporary plant established. A tract of 20 acres of land was acquired as the site for a factory and on this buildings were erected and equipped for manufacturing, the intention being to erect units for production to meet whatever demand might be developed.

The truck design decided on was a standard type having normally a load rating of 2½ tons, but this was rated as a two-ton unit, so that from the viewpoint of conventional practise it was considerably oversize. The type chassis has been produced without change, and the determination to build other sizes to this design was the result of a demand for machines of other capacities that was so large and insistent that the company was impelled to change its original policy.

Construction Units of Known Quality.

In the initial design the company's engineers adopted as construction units Buda engines, equipped with Zenith carburetors, Eisemann high-tension magnetos, Duplex governors, G-O zigzag cellular type radiators, Fuller dry plate clutches, Fuller selective sliding gear type transmission gearsets (incorporated with the clutches and engines as unit power plants), Arvac driving shafts and universal joints, Clark internal gear driven rear axles, Shuler front axles, Prudden artillery type wood wheels equipped with solid tires, Detroit frames, Detroit Steel Products springs and Jacox steering gears.

These were regarded as being the highly developed products of specialists, that had been proven by service experience, and were widely known as having the qualities that are essential for truck construction, endurance, dependability and operating economy. The design was developed to have accessibility, simplicity and high factors of safety, these qualities being provided for in assembly engineering.

The Buda Type HU Engine.

The Buda engine in the two-ton chassis is the standard HU model, which was developed expressly for truck construction, and which, with slight modifications, was constructed by the Buda Co., and by its licensees in large numbers for United States army trucks. The maker claims that this was the only make of engine that measured up to the War Department's specifications practically without change. The engine is a four-cylinder, four-cycle, water cooled, L head, vertical type, having cylinder bore of 4¼ inches and stroke of 5½ inches, that is rated at 28.90 horsepower by the S. A. E. formula, but is claimed by the maker will develop 42 horsepower at maximum speed.

The engine cylinders are cast en bloc with the water jacket integral and with the jacket head open, a construction that insures uniformity of cylinder and jacket walls and that the water chambers can be thoroughly cleared, so that the circulation of water may be free and the efficiency of the system high. The jacket head is cast with the water outlet manifold integral and is formed to direct a movement of water across the heads of the combustion chambers. The head is retained by a series of studs and cap screws and can be easily removed for cleaning. The water intake is baffled so that the water entering the jacket directly under the exhaust valves will so circulate as to thoroughly cool them. The block and the head are cast from high grade gray iron and are machined to obtain exactness and interchangeability.

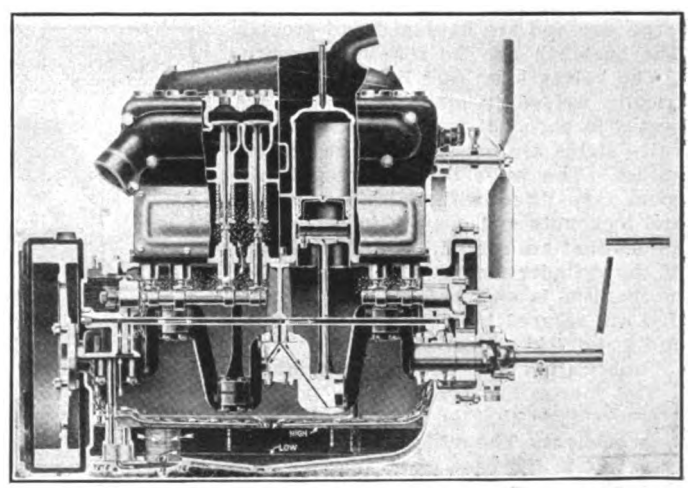
The Detail of Construction.

The crank case is cast from gray iron in two sections, the upper half being divided by a transverse vertical web that carries the center bearing for the crankshaft and the rear support arms are integral with it. In the lower section is fitted a removable steel plate that forms the base of the crank chamber and the top of the oil reservoir, and which is easily removable for cleaning. Both sections have forward extensions that with a cover plate house the timing gearset and rear extensions that enclose the flywheel and form the bell housing to which the clutch and transmission gearset casing is bolted.

The pistons are cast from gray iron and they are turned to dimensions and each fitted with three diagonally split eccentric compression rings, which are ground on the edges and faces to exact fit. Much care is taken in boring the pistons to obtain exactness and alignment of centers.

The Reciprocating Parts.

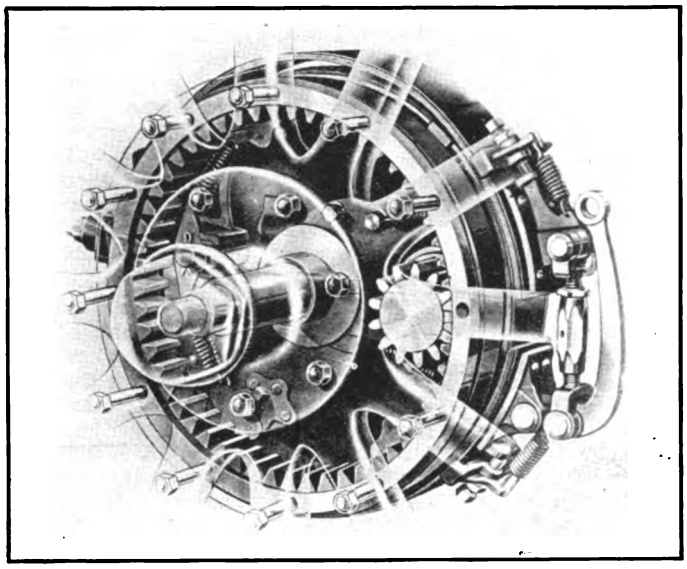
The crankshaft is drop forged from a special alloy steel with the flywheel flange integral, and it is heat treated and ground with much care. It is a three-journal type, with the journals 2⅛, 2¼ and 2⅜ inches diameter from front to rear, and 3⅛, 2¾ and four inches length in the same order, this giving a total bearing length of 9⅞ inches. The crankpins are 2⅛ inches diameter and 2½ inches length. By heat treatment the tensile strength of the shaft is made 120,000 pounds to the square inch and the elastic limit 85,000 pounds to the square inch.



Sectional View of Model HU Buda Engine Showing the Full Pressure System of Lubrication.

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The connecting rods are I section steel drop forgings and these are bored and finished with great care to obtain alignment of bores and exact weight and balance. All the caps are fitted with four nickel steel bolts. The camshaft is a three-journal type of large size, drop forged from special steel, with the cams and the timing gear flange integral. The shaft is ground and case hardened and finished on a special machine to obtain accurate balance. The cams are wide and designed to wear very slowly. The timing gearset consists of crankshaft, camshaft and water pump shaft gears, which are large size and have wide faces. The gears are helical cut and much care is taken to insure accuracy of centers. The gears are practically noiseless in operation and have long endurnace.



Phantom View of the Wheel Hub of a Clark Internal Gear Drive Axle, Showing the Gears and Pinion and Brake Assembly.

Bearings and Valve Mechanism.

The main and connecting rod bearings are babbitt metal mounted in bronze cages that are fitted with shims by which adjustment may be made. The three large dimension camshaft bearings are of phosphor bronze. The small ends of the connecting rods, which oscillate on the tubular steel wristpins, which are seated in the bosses of the pistons and are secured by screws, are bushed with phosphor bronze. The wristpins are large size and are hardened and ground. The bushings may be renewed if worn.

The valves have cast iron heads electrically welded to steel stems and are seated in ports 1⅞ inches diameter. The valve stems are fitted in long renewable guides. The valve tappets are a mushroom type fitted with adjusting screws and lock nuts and operate in removable guides that are seated in the base flange of the cylinder block. The entire valve mechanism is enclosed by cover plates that are secured by studs and wing nuts and are quickly removable.

Lubrication and Cooling Systems.

The lubrication system is a positive pressure type that is maintained to be very efficient. The oil is drawn from the reservoir in the base of the engine case through a filter screen by a gear pump and is forced through pipe leading to the main bearings, camshaft bearings and the timing gearset, through passages in the crankshaft to the crankpin bearings and through tube to the wristpins. The cylinders and piston walls, the cams, valve tappets and valves are lubricated by the oil spray thrown off by the centrifugal movement of the crankshaft.

The engine is cooled by a circulation of water forced by a centrifugal pump with a bronze impeller through the cylinder jackets and a radiator having cast top and bottom tanks and a large removable core. Radiation is promoted by a fan mounted on ball bearings on an adjustable bracket on the forward end of the cylinder block that is driven by a flat belt from a pulley on the water pump shaft.

Power Transmission System.

The clutch is a multiple disc type that automatically compensates wear and the transmission gearset has three forward speed ratios and reverse. The shafts and gears are large, of 3½ per cent. nickel steel, and the shafts are mounted on annular ball bearings.

The engine, clutch and gearset are assembled as a unit power plant that is mounted on a trunnion on the forward cross member of the frame and on arms on either side frame member, being thus protected against chassis distortion stresses. The engine is governed by a Duplex governor driven from both the engine and the drive shaft, controlling independently both engine and vehicle speed. The source of ignition current is an Eisemann G-4 magneto with fixed spark, and the fuel is supplied through a Zenith carburetor fitted with a stove from a 20-gallon tank under the driver's seat.

The drive is by a two-section tubular shaft fitted with three universal joints, and an exclusive feature of design is the straight line transmission of power, the power plant being inclined at an angle of two degrees, 20 minutes, so that when under load the drive shaft is straight. The object is to obviate frictional losses in the universal joints and deliver the full power developed to the rear axle. As the lubricating system of the engine is a full pressure feed, with this position of the engine there is adequate lubrication.

Clark Internal Gear Axle.

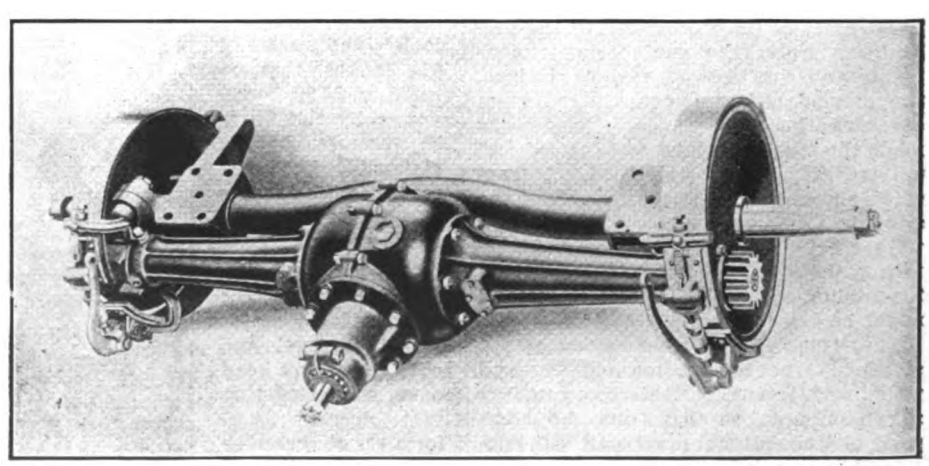
The Clark internal gear rear axle has a dead axle that carries the load and a jackshaft that is supported by extensions of the spring pads, the ends of the jackshaft housing being mounted in the brake flanges, which also carry the brake shoes and are enclosed by the internal gear housings and brake drums. The differential gearset is constructed with a large master gear so that power is applied two inches nearer the wheel rims than ordinarily, increasing the power leverage 12 per cent. The front axle is a heavy I section steel drop forging equipped with Timken roller bearings. The wheels are built with 14 2½-inch spokes, and are equipped with 36 by four-inch tires forward and 36 by seven-inch tires rear. The wheelbase is 152½ inches, but 168 inches is optional, and when designed for tractor use the wheelbase is 108 inches.

The Detroit frame is 208 inches long and 34 inches wide, of steel channel section 5¾ inches wide, with wide webs, of quarter inch metal. It has five cross members and is strongly reinforced and gusseted. This is mounted on semi-elliptic Detroit springs, the forward set being 40 inches long and 2½ inches wide, and the rear set 54 inches long and three inches wide. The rear springs are designed to take the driving thrust and axle torque, no radius rods being fitted.

The Control Elements.

The steering gear is a Jacox semi-irreversible block and nut type and is located at the left side. The control is by foot pedals for the clutch and service brake, hand throttle lever on the steering wheel and emergency brake and gear shift levers at the center of the footboard. The service brake is external contracting and the emergency brake internal expanding on and in the rear wheel drums.

Much care had been taken in designing to have all moving contacting sur-



Clark Internal Gear Driven Rear Axle with the Brake Flange Clear to Show the Wheel Spindle and the Jackshaft Pinion.

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faces large area, the spring hangers, spring bolts, brake rods and bracket fittings of unusual size, and lubrication has been carefully provided.

The company will begin production July 1 of the two new chassis, the tests of the experimental machines having been completed. These, with the two-ton truck and tractor (capacity three to seven tons) will complete the series. They will be built of practically the same construction units, proportioned as to chassis size.

The 1½-ton unit will have an engine with 3½-inch cylinder bore and 5½-inch stroke. It will, in all probability, be sold completely equipped without extras save the body, the standard equipment to include cab, pneumatic tires, tire pump, electric lights and engine starter. The 3½-ton chassis will have an engine with 4½-inch cylinder bore and six-inch stroke, four speed ratio transmission gearset, steel wheels and radiator and bumper. This chassis will have a seven-inch square end frame instead of the "necked" type of the two-ton unit. The drive will be through radius rods and the rear wheels will be fitted with 36 by five-inch dual tires. These machines are expected to sell for about $1875 and $3500 respectively.

The two-ton chassis, with driver's seat, cushion, front fenders, running board, oil dash and tail lamps, horn, jack, tools and tool box, sells for $2500, but when equipped with a fifth wheel for tractor work the price is $2600.

WILL PRODUCE A TWO-TON TRUCK.

The Swedish Crucible Steel Co., Detroit, which has been for a long period an active enterprise in the automotive industry, is now preparing to produce a truck that will be rated at a load capacity of two tons and will be sold for somewhat more than $1000. The company is to guarantee that the machine will have a 50 per cent. overload capacity and it includes such features as internal gear drive, steel wheels in rear with 32 by 3½-inch dual solid tires, and five-inch channel frame. It makes use of Ford power plants and it is claimed can be operated at only one-third higher cost than the Ford one-ton truck. The speed is 20 miles per hour.

This will be, it is claimed, the lowest priced two-ton truck ever sold, and the cheapest haulage vehicle to operate on a per ton mile basis. The Swedish Crucible Steel Co. can produce 100 or more of these trucks a day. The Swedish Crucible Steel Co., which has a capital and surplus of over $1,000,000, has been in business for more than 10 years.

The company is also producing two new chassis conversion units, both of which are the invention of N. L. Olsen, president of the company, which are claimed to have distinct utility and to be decidedly economical. The one is the Olsen automatic spring adjuster for one-ton Ford truck chassis. This takes the place of the three upper leaves on the rear spring of the truck. The truck is claimed to have the same riding qualities as the passenger car chassis.

The other is the Olsen frame and spring unit, claimed to be the heaviest equipment of the kind ever built. This consists of a five-inch pressed steel channel section frame with two 52-inch, semi-elliptic springs, which serves as a mount for the rear end of the standard Ford chassis frame. It is said to be a very practical unit for increasing the body size, as the Ford truck has normally but 54 inches space back of the cab. This unit is priced at $100 and with a drive shaft extension that will increase the wheelbase to 142 inches the price is $150.

BUSINESS DEPENDS UPON ACTION, NOT DELAY.

In the "Buda Engine Era," a publication issued monthly by the Buda Co., Harvey, Ill., is published a very impelling appeal by Lon R. Smith, sales manager for the company, under the caption "Buck Up" and "Go to It." Statement is made that the slang expressions are intended to emphasize what the American people are most in need of. "Buck Up" is applied to mean that business men should prepare for "going over the top" and should base their confidence on the well known ability of the American people to "come back;" that they should prepare now, not after a while, for the greatest wave of business and labor prosperity this country has ever known. "Go to It" is defined to start now—not to be a mollycoddle or a pussy-footer, but hit for business and hit hard, by advertising, soliciting trade, by being optimistic, by instilling into salesmen and employees the fullest measure of confidence, and to inaugurate sales methods that will have a punch that will bring results. Business men are urged not to be laggards in what will contribute to establishing confidence, so that there will be stable foundation for business activities. The appeal points out that what is needed is concerted, constructive endeavor that will absorb idle labor, reduce discontent, bring contentment to the people as a whole, and bring about conditions that will establish the fullest degree of prosperity and make the nation better and greater than ever before. Everything depends upon the attitude of business men, and if they are not willing to do their part, and do it now, just so long will national prosperity be delayed.

DODGE BROS.' EXPORT OFFICE.

Dodge Brothers, Detroit, have opened an office at 43 Exchange Place in the down town district of New York City to facilitate the transaction of the company's export business through the port of New York. The office will be in charge of John C. Mathews, who for several years has represented the foreign sales department in New York City.

PACKARD APRIL PRODUCTION.

The Packard Motor Co. produced 200 passenger cars and 750 trucks in April. In May 350 passenger cars will be turned out, while June and July production plan calls for 500 cars monthly.

NEW CAPITAL FOR REORGANIZED NAPOLEON MOTORS.

The Napoleon Motors Co., manufacturer of Napoleon trucks, has been reorganized and new capital interested, and plans are making for production on a considerable scale. The statement is made that the company has in prospect a very considerable volume of business which justified increasing the resources and adding to the plant equipment.

Four men, formerly connected with the Republic Motor Truck Co., Alma, Mich., have become associated with the company. They are: W. G. Rath, formerly office manager, who is general manager; W. H. Schmaltz, formerly supply buyer, who is purchasing agent; Stanley Rae, formerly superintendent of the motor division, who is production manager, and C. D. Peet, formerly of the Salvage Sales department, who is assistant general manager and advertising manager. These four men were connected with the Republic company for considerable periods and are thoroughly versed in the details of truck manufacture, cost, sales, production, etc., and the company has been organized to obtain manufacturing economy and efficiency.

Statement is made that the purpose is to produce 1000 trucks this year. The engineering department is designing a new model, which is already well advanced in development, and announcement will shortly be made of the details.

HUFFMAN BROS. TO BUILD TRUCKS.

Huffman Bros. Motor Co., Elkhart, Ind., which was recently formed, has secured a plant in which will be manufactured two types of medium priced trucks. One with internal final drive is listed at $1495, and the other, with worm gear final drive is listed at $1695. W. L. Huffman is president of the company and other officers are: F. C. Huffman, vice president; Leroy Huffman, treasurer; Verne C. Cawley, secretary; R. S. Wiltrout, general manager, and N. L. Kuhnen, sales manager.

FEDERAL TRUCK HAULED LARGEST SPRUCE LOG.

The largest spruce log ever brought out of the forests of Washington was carried from near Hoquiam, on a 3½-ton Federal truck operated by the Spruce Division of the United States Army. It measured 94 inches at butt, 86 inches at top and was 24 feet long. The log contained over 13,000 feet of lumber and weighed over 39 tons.

MAIBOHM TO MOVE TO SANDUSKY.

The Maibohm Motors Co., Racine, Wis., expects to move its entire organization to Sandusky, O., where a $175,000 plant is being built. The executive offices and a portion of the manufacturing end have already been moved into temporary quarters in Plant No. 5. The new plant will comprise about 75,000 square feet and is expected to be ready for occupancy in about 60 days.

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20,000 ARMY TRUCKS FOR ROAD WORK

Washington, May 12.—Plans are now making for the distribution by the Department of Agriculture to the different states of 20,000 trucks which will be turned over to it by the War Department, the machines to be given to the states conditional upon their being used for construction of highways to be built wholly or in part with Federal aid. Statement is made that the trucks will have a valuation of approximately $45,000,000, and that of these 11,000 are new and 9000 have been used, but are from every way serviceable.

The distribution is to be made by apportionment to states upon request of the state highway departments and on the basis of the requests received from the states for Federal aid from the funds available under the law enacted in 1916. By this is meant that the Federal aid is made primarily on the basis of the mileage of roads in each state that is or may be used for the transportation of mail, and that the funds so apportioned must be equaled by appropriations by the states. The building projects must be approved by the department, and upon such approval the money is placed at the disposal of the states. The trucks, as surplus of the War Department, are to be distributed under the provisions of section seven of the postoffice appropriation bill.

The trucks are in storage and in use in different parts of the country and as soon as they can be inventoried and classified they will be sent to the highway departments of the states, which will have no expense other than for freight and other incidental transportation charges.

According to statement all save three states have made requisition for the number of machines that are required, but nothing is known of the total number to be distributed. The number will vary largely with reference to states, for mileage of roads on which mail is or may be transported does not imply that the sections are well populated or that there is particular need of roads. To the contrary, the states that may have far larger populations and highways on which the traffic is very heavy may not have anything like the apportionment the use of the roads would seemingly demand.

This is a shortcoming of the appropriation bill. The nation, if the Federal appropriations are apportioned to requirements, will have within the next three years nearly $600,000,000 available for highway building, and up to the present time, although this vast sum is to be expended, there is no national highway construction policy and each state is building roads independently of the needs of industry and commerce and without regard to national needs.

The distribution of trucks is primarily with a view of promoting the building of roads through the economies that might be realized through state ownership of vehicle equipment, but so far as known there has been no statement that such acquisition of trucks would be a state economy. There are many problems involved in state ownership and in state construction to justify a conclusion that states would benefit from trucks, despite the fact that the machines have a value.

WAYNE ADVISORY SERVICE FOR OIL MEN.

The Wayne Oil Tank and Pump Co., Fort Wayne, Ind., recently inaugurated a consulting and advisory service for oil men. It has retained the services of F. A. Bean, consulting engineer, who has been placed in charge of this work. Mr. Bean has had a broad engineering experience of 23 years, 15 of which have been in executive capacities.

Mr. Bean first became affiliated with the oil industry in 1902 in the Kentucky and Oklahoma fields. For the past year and a half he has been at the head of the maintenance and equipment department of the Sinclair Refining Co., and in charge of the designing and construction of its sales branches and filling stations.

He has also been closely associated with the automobile industry and his knowledge should be of great assistance to oil men in the purchase, operation and maintenance of rolling equipment.

There is to be no charge connected with the service of this department. All advice, plans, etc., are to be given gratis. This service should appeal to all oil men, especially the marketers and jobbers. The Wayne company invites all oil men to make free use of this service. The department will deal with all phases of standardization of equipment, economical operation and maintenance of equipment, designing and planning buildings, ground layout, etc.

KALAMAZOO TAKES OVER LANE TRUCK.

The Kalamazoo Motors Co., which has been newly organized, has taken over the business of the Lane Motor Truck Co. of the same city and will continue operations along the same line.

HACKETT IS OSHKOSH DISTRICT SALES MANAGER.

The Oshkosh Motor Truck Manufacturing Co., Oshkosh, Wis., has appointed



Capt. Wakeman Hackett, District Sales Manager, Oshkosh Motor Truck Co.

Capt. Wakeman Hackett a factory representative covering the Middle West section. Capt. Wakeman was recently discharged after returning from France, where he served with 121st Field Artillery, 32nd Division. He was in the service 20 months.

F. M. House, with the Republic Truck Co., Alma, Mich., for many years, has been made Pacific coast manager of that company, with headquarters at Portland.

WATSON CORPORATION TO INCREASE ITS BUSINESS.

The Watson Wagon Co. of Canastota, N. Y., under its new name, the Watson Corporation, with an expansion in capital of from $600,000 to $1,000,000, is planning extensive additions to its equipment. As part of its plans for enlargement the company has bought the Sherwood Bros. Manufacturing Co., children's wagon maker, of Canastota, and will continue this business under the Watson management. The Marvin & Casler Co. of Canastota, and the Empire Axle Co. of Dunkirk have been taken over in a similar manner, thus adding three distinct plants to the company's present facilities. To the present line of trailers and tractors made by the Watson Corporation three capacities of trucks will be added shortly, 1½, 2½ and 3½-ton units. It is expected that these will be ready about Nov. 1. In addition to these sizes a ¾-ton unit is being planned for a somewhat later date.

NEW YORK TRUCKS MUST HAVE MIRRORS.

According to the Booth bill, which was signed recently by Governor Smith of New York, motor trucks in that state with a capacity of one ton or more must be equipped with mirrors so that the driver may have a view of the road behind him.

DETROIT OFFICE FOR STEEL PRODUCTS.

A Detroit office is being opened by the Pittsburgh Steel Products Co., which will be in charge of Charles Phillips, who was formerly associated with the Shelby Steel Tube Co.

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"MOTOR TRANSPORT DAY" AT DETROIT

Detroit, Mich., May 19.—Today is "Transport Day" in this city and the object of the promoters is to demonstrate the utility of power trucks. The purpose of the participants in the demonstration is to bring to the attention of the public the practical possibilities from the use of trucks for general highway haulage.

Mayor Couzens has efficiently designed the event as "Motor Transport Day" and has urged the public generally to take part in it. The Detroit Transportation Association, of which F. L. Henk is managing secretary, which is composed of many concerns and individuals engaged in trucking, took the proposition up and committees, consisting largely of members, completed the arrangements for the demonstration.

Invitations were extended to motor truck, trailer, tire and accessory manufacturers and to all owners and drivers of trucks. The principal event was a parade of trucks through the principal streets, which was begun shortly before noon, and in which were nearly 500 machines of all kinds, many of them decorated, some of them having banners and signs apropos of truck haulage, and a considerable number freighted. Some of the loads were extremely large, some of them were novel and all were interesting spectacles. In the long line of trucks were some that were freighted with men and women who had given the day their best endeavors to make it successful.

A dozen bands were in the line, some of them composed of employees of different concerns in the automotive industry. The parade was headed by a squad of traffic police riding in a truck, and the governor of the state and the mayor of the city and men in various public offices rode in the trucks and added to the importance of the occasion by their presence.

The parade was through all the principal streets of the city and then the line was broken and different groups were driven to different towns and cities within a radius of a score of miles, the purpose being to awaken interest in the use of highway transportation for all kinds of haulage, but especially to and from Detroit. Each group was accompanied by a band, and wherever stops were made crowds were attracted. Moving pictures were made of the parade and the intention is to show these in many of the principal cities for the purpose of stimulating truck use. The parade was one of the best exhibitions of truck bodies ever seen in America, there being practically every size and type that could be mounted on truck chassis, many of these being designed for specific uses, and many of them were well finished, and in some instances highly decorated. There were numerous types and sizes of semi-trailers and trailers and various adaptations of quick discharging bodies.

The demonstration was from every point of view a decided success and with this as a beginning there will no doubt be effort made to similarly arouse public interest in highway haulage in many of the principal cities of the country.

CLARK EQUIPMENT CO. GRANTS EMPLOYEES VACATION.

All employees, including those paid by the month, day or hour, who have been employed one year, will be allowed one week's vacation with full pay according to a plan announced in February at the annual meeting by Eugene B. Clark, president of the Clark Equipment Co. of Buchanan, Mich., manufacturer of internal gear drive axles and disc steel wheels for motor trucks.

The new plan goes into effect this month and includes mechanics, tool makers, foundrymen and all men irrespective of the basis of their employment. Heretofore this privilege has, as in other corporations, been granted only to officials and the office and clerical forces of the company.

The scheme is proving very popular with the men and schedules have been made up which allow the men in each department to plan the month and week of their vacation period so as not to disrupt the production of the plant.

WHITE TO HAVE SERVICE STATION IN CHICAGO.

The White Co. has purchased a site in Chicago upon which it will build a new service station. The property has an area of about five acres. In addition to enlarging its service station in Cleveland this company has completed a service station in Philadelphia, and has purchased land in Long Island City, where a new station will be erected to take care of the New York territory.

Fred W. Thomas, formerly chief engineer for the Olympian Motors Co., Pontiac, Mich., has opened a consulting and sales office at 335 Guardian building, Cleveland.

LON R. SMITH TO JOIN MIDWEST ENGINE CO.

Announcement is made by the Midwest Engine Co., Indianapolis, Ind., that Lon R. Smith, for a considerable period sales manager for the Buda Co., Harvey, Ill., will become general sales and advertising manager of that company, beginning June 1. The Midwest Engine Co. was formerly the Lyons-Atlas Co., and is engaged in production of engines of different types and sizes, and statement is credited to President John G. Wood that the final step has been taken in the development of the organization to a point where engineering, production and sales will keep abreast.



Lon R. Smith to Join Midwest Engine Co., Indianapolis, Ind., as Sales Manager.

Mr. Smith has made an enviable reputation in the development of the sales organization of the Buda Co. He has wide experience in engineering and sales, and prior to his connection with the Buda Co. was sales representative for the Eisemann Magneto Co. His home was originally in Indianapolis and the fact that the executive offices of the Midwest company are in that city may have in part influenced his decision.

STEEL TUBE MAKER BUILDING NEW PLANT.

The Detroit Seamless Tube Co., Detroit, Mich., is building a new plant which when finished will have a capacity of 2500 tons of steel tubing a month. The plant is being put up in Detroit opposite the Morrow aviation field and the first section, costing $1,000,000, will be completed Jan. 1, 1920, when the company will move from its present location on West Jefferson avenue and 19th street. The complete plant, which will include three manufacturing units, will cost $3,000,000.

The company, which has been in existence for 19 years, manufactures seamless steel tubing for automobiles and other work in sizes from one-half inch to six inches diameter.

WELLER GOES TO HERSCHELL-SPILLMAN.

J. H. Weller, formerly assistant production manager of the Packard Motor Car Co., has been appointed assistant to B. W. Burtsell, president of the Herschell-Spillman Motor Co., North Tonawanda, N. Y., and will be in charge of production.

J. S. Holihan, former sales manager of the Standard Motor Truck Co., Detroit, has joined the sales force of the Garford Motor Truck Co., Lima, O.

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NEW TRUCK TO BE MADE IN LOS ANGELES.

J. Neil Patterson, Los Angeles, Cal., is completing plans for a company to be organized to manufacture trucks and trailers in Los Angeles. Mr. Patterson was formerly president of the Los Angeles Trailer Co., and he is now vice president of that concern. The new company will bring out a truck to be known as the Patterson, and will be made of standard parts. Robert Fry of Detroit, until recently with the engineering department of the Motor Transport Division of the Army, is associated with Patterson as chief engineer.

SEWELL WHEEL DECLARES DIVIDEND.

At a recent meeting of the board of directors of the Sewell Cushion Wheel Co., Detroit, a dividend of seven per cent. was declared on both the preferred and the common stock for stockholders of record June 1, 1919. Orders already booked for the first four months of this year show an increase of 41 per cent. over the same period of 1918. The Sewell Cushion Wheel Co. is now represented in all the principal cities of the East and Central West and will in the course of 60 days announce the opening of factory branches in Portland, Ore.; Los Angeles and San Francisco.

NEW JUMBO TRUCK DISTRIBUTORS.

The Nelson Motor Truck Co., Saginaw, Mich., has made contract with the Gates-Kelley Automotive Co., Los Angeles, Cal., for distribution of Jumbo trucks in Arizona and Nevada, the initial order being for 500 chassis.

Contract has also been made with the Russel-Hawkins Co., Atlanta, Ga., for distribution of Jumbo trucks in Georgia, Alabama, Florida and South Carolina. The company is erecting a building that will have 51,000 square feet of floor area as a service station and salesroom. When completed the plant will be one of the largest and best equipped in the South.

INTERSTATE COMMERCE BILL OF LADING PRESCRIBED.

Announcement has been sent out by Manager J. B. Marvin of the traffic department of the National Automobile Chamber of Commerce to members concerning a new form of bill of lading that has been prescribed by the Interstate Commerce Commission, the effect of which is far reaching and applies to practically every concern engaged in the power vehicle industry. This announcement is as follows:

The Interstate Commerce Commission by a decision rendered in the "Bill of Lading Case" clears up many points of contention between shippers and carriers by outlining what should properly be printed in bills of lading. These documents constitute the contract between shipper and carrier and the commission's decision holds the carriers very closely to common law, eliminating many conditions that would tend to release the carriers in various respects from liability.

One important feature for which we contended in this case is the paragraph attempting to release carriers from liability when property is transported on open cars. We objected to both the old paragraph and the new (modified) one that was suggested by other shippers On this point the commission states:

"We are of the opinion that the exemption stipulated for in the present and proposed bill is too broad and too greatly favors the carrier to be entirely just and reasonable. Moreover, we think that it falls within the provisions of the Cummins amendment so far as it seeks to exempt the carrier from the liabilities with which it would be charged under the common law. To that extent it would be invalid and void. To the extent that the carrier would escape liability at common law, stipulation is unnecessary. We shall, therefore, not approve either the rule proposed by the carriers or the substitute offered by the shippers for inclusion among the conditions."

Consequently, the form approved by the commission contains no reference to the liability on such shipments. The decision condemns as unlawful and void, with respect to domestic bills of lading, the rule fixing the measure of liability as the invoice value of goods at time and place of shipment and directs its complete elimination from the proposed bill.

Carriers are required to adopt the bill of lading prescribed by the commission on or before Aug. 8, 1919.



Mack Truck Equipped with a Portable Forge for Army Use, One of the Spectacles Seen in the Victory Loan Parade in New York City.

MOTOR TRUCKS FEATURE OF NEW YORK'S LOAN DRIVE.

In the same sense that power was in a very large measure utilized in the army operations in the European war, so was motorized army equipment used to arouse enthusiasm in the drive made in New York City for subscriptions to the Victory Loan. There are those who believe that the spectacles arranged to stimulate the buying of Victory notes were very largely the reason for its phenomenal success.

There was wonderful realism in the parade made through the streets of the metropolis, for there was equipment of practically every description from tanks to ambulances, from artillery to searchlights, and innumerable floats representing the conditions in which the soldiers of the nation fought and lived. The field equipment was very complete and interesting and there was even a printing press used by engineers to make field map in advanced zones, on which Victory Loan posters were printed. The parade was eight miles long and it was witnessed by millions, who gathered along the route and waited hours before and while it was passing. Some of the floats carried crippled and wounded soldiers, who are being trained to work with artificial hands, arms and limbs. An example of the motor driven shops is shown in the accompanying illustration of a Mack truck on which was a portable forge used for emergency repair work.

LYONS COMPANY TO BUILD LIGHT TRAILERS.

The F. P. Lyons Iron Works, Manchester, N. H., realizing the demand for trailers on account of the uncertainty of freight and express deliveries, has entered the field with a light trailer which has a capacity of 750 pounds, to cost $120. To make this machine the company will erect a temporary addition to its plant in South Elm street. George M. Norton will have charge of the manufacturing of the trailers and Peter R. Jennings will be sales manager for the State of New Hampshire.

TOWER TRUCK COMPANY INCREASES CAPITAL.

The Tower Motor Truck Co., Greenville, Mich., has increased its capital stock from $200,000 to $500,000, and while $100,000 of the increase will be sold, the remainder will be retained in the treasury for future expansion. The rapidly increasing business necessitated additional capital.

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444,882,194 gallons of kerosene oil were consumed throughout the United States in 1918; the greater part of which went into individual homes; a striking example of the service motor trucks are rendering transportation in the wide-spread distribution of necessities.



INTERRUPTION AND DELAY of delivery schedules are serious matters.

HEAVY DUTY TRUCKS can hold to their schedules only when their tires are dependable.

FISK SOLID TIRES are built to wear—to meet the ever-changing road conditions.

THEY ARE DEPENDABLE. They do their part to keep the truck running on schedule. Next time—buy Fisk.

FISK TRUCK TIRES

(When Writing to Advertisers, Please Mention MOTOR TRUCK.)

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RAMEY IS NOW COTTA SALES MANAGER.

Announcement is made that Lieut. F. W. Ramey, who served as an observation officer in the United States Artillery in France, has been discharged from service and has been placed in charge of the sales department of the Cotta Transmission Co., Rockford, Ill.

Mr. Ramey has had considerable engineering experience and in changing from a war to commercial production his services will be directed to the expansion of the company's business, the development of a sales organization and new trade connections.

FEDERAL BRASS USES MORE SPECIFIC NAME.

Owing to the fact that the Federal Brass Works, Detroit, has specialized for three years in the manufacture of babbit lined bronze back bearings and bronze bushings, this firm has taken the logical step of identifying itself in name with its products. The Federal Bearing and Bushing Corporation is the new name that has been adopted, the organization otherwise has not been changed and remains in the same hands. Lloyd P. Jones is president, S. C. Reynolds vice president and treasurer and F. C. Heath secretary.

OSHKOSH ADOPTS PNEUMATIC CORD TIRES.

The Oshkosh Motor Truck Manufacturing Co., Oshkosh, Wis., has found the pneumatic cord truck type tire so satisfactory in service that it has decided to use it on all vehicles as standard equipment without extra charge.

GOODYEAR TRUCKS ON SOUTHERN DEMONSTRATING TOUR.

All of the principal commercial centers of the South are being visited by the two big trucks which the Goodyear Tire and Rubber Co., diverted from the Akron-Boston overland express service and sent to participate in the big truck and tractor demonstration at Macon, Ga. The trucks were driven from Akron to Macon with full freights and they made a detour that added 300 miles to the route originally planned. Following the formalities in Macon the Goodyear trucks were sent to adjacent towns and cities and attracted so much attention that the company decided to make what will probably be the longest demonstration in point of time ever undertaken.

The object of sending the trucks was two-fold, the one being to show the possibilities of overland freightage with reference to economy of time as compared with other forms of transportation, and the other was to prove the practicality of the big pneumatic tires, with which the trucks were equipped.

Pneumatic tires were first utilized for trucks by the Goodyear company on the Akron-Boston express route, and one of the practicalities established was the far greater speed, the maximum permitted ranging from 23 to 30 miles an hour, and with day and night driving schedules the trips were made with rapidity as compared with any other form of transportation.

Pneumatic tires are not usual equipment on heavy trucks, but the Goodyear company maintains that they are economical despite the higher cost, and that the claims are proven by comparisons of operating figures of the different units of the fleet it has in its service.

WILSON FOUNDRY MAKES BONUS AWARDS.

The Wilson Foundry and Machine Co., Pontiac, Mich., has announced a plan of continuous service awards for its employees and the plan is based on efficiency and continuity of service. Every employee working six months without absence, except for recognized reasons, will be entitled to participate in the payments, which will be made quarterly.

THE LANSING-HOWELL EXPRESS SERVICE.

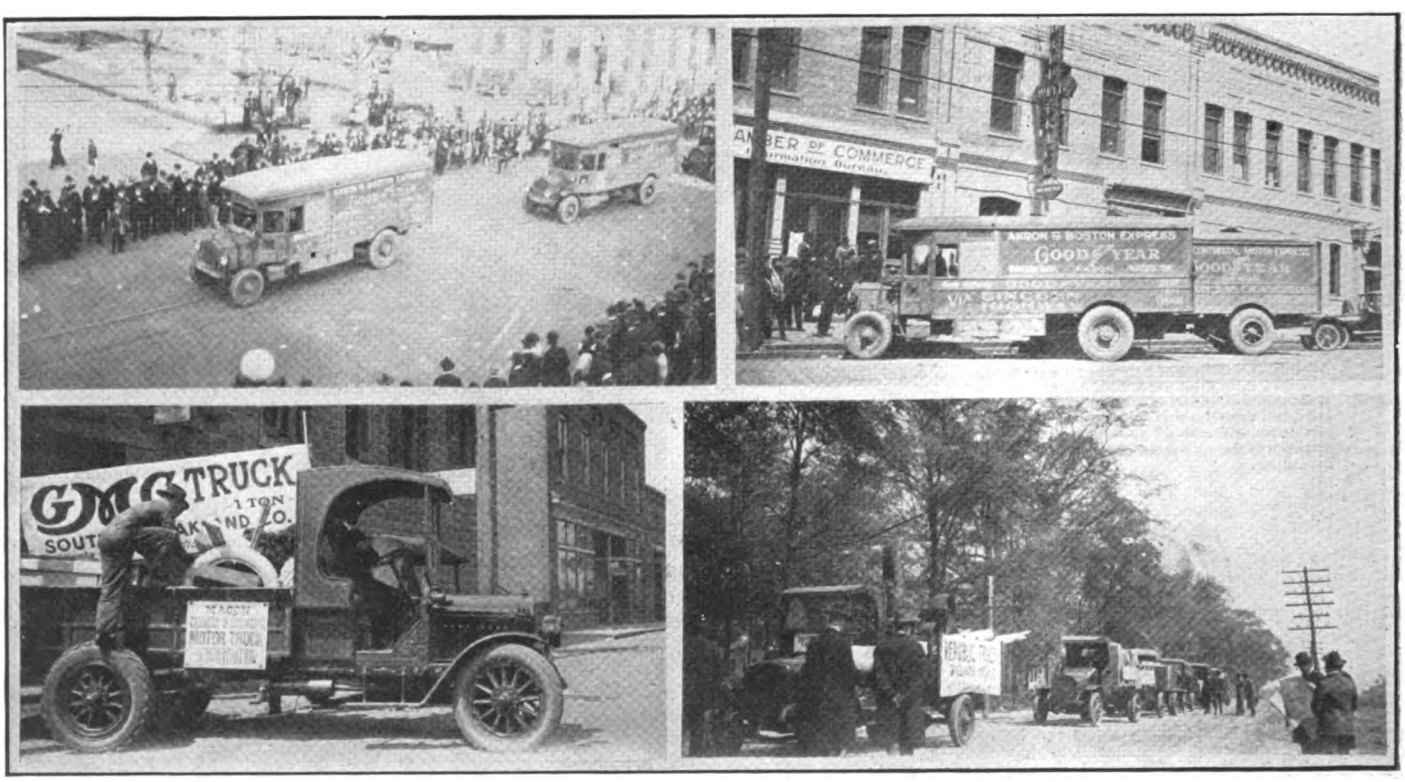
A truck express service between Lansing and Howell, Mich., a distance of 35 miles, was established May 1 by L. W. Dymond, using a Reo delivery wagon and trailer. The operating plan is to haul merchandise from wholesalers to retailers along the route, and to return with produce and any other freight offered.

WILL MANUFACTURE NEW ENGINE.

A new engine, the invention of H. L. Chapman of Marcellus, Mich., is to be built at that place by a company organized by W. C. Jones, Frank Patch, Harvey Romig and F. G. Wheeler, the last named a Chicago engineer. Chapman sold his patents and business to the interests stated.

The plants of the Continental Motors Corporation at Detroit and Muskegon have completed all war contracts and are now on normal peace production.

Stuart S. Rydehn has been appointed superintendent of the Bantam Ball Bearing Co., Bantam, Conn., succeeding Edward H. Cox, who resigned.



The Goodyear Pneumatic-Tired Trucks Demonstrating in the South: Upper Left, During the Parade of the Macon Demonstration; Upper Right, the Trucks at Macon After the Long Trip Overland; Lower Left, Tire Delivery by Transfer; Lower Right, Caravan En Route to Adjacent Towns to Prove Truck Haulage Possibilities.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 6. PAWTUCKET, R. I. JUNE, 1919.

STATES' PROBLEM IS OPERATING GIFT TRUCKS

Nearly 28,000 Machines and Army Road Building Equipment in France to Be Distributed by Department of Agriculture in Ratio of Allotment of Federal Funds for Highway Construction

WASHINGTON, June 18.—How to dispose of a total of 27,893 trucks and motorcycles, transferred to it by the War Department, is the problem of the Office of Public Roads of the Department of Agriculture. These machines have been turned over to the Department of Agriculture because it is vested with the authority to expend the appropriations made by the Federal government for the construction of highways and the policy of the administration is for the department to cooperate with the different states in road building.

But obviously this is an enormous number of vehicles and there is no reason to believe that the states can receive anything like the allotments that shall be made. The road building plan of the government, which is practically established by the bills making appropriations, is for the nation and the states to share equally the cost of building highways that are or shall be used for the transportation of mail; that is, the individual states are allotted the ratio from the appropriations that the mileage of roads in each state on which mail is or can be carried bears to the total mileage of such highways of the country, and each state must appropriate an amount equal to the Federal allotment.

This plan is seemingly equitable enough, but states with comparatively small populations and large mileage of highways will receive large sums, while states with much greater populations on the basis of area and smaller road mileage will receive relatively lesser allotments. By this is meant that a state such as Rhode Island, very thickly populated and having small mileage of highways, will receive much less than Texas, which has very few inhabitants to the square mile of area, but an enormous mileage of roads on which mails are or could be transported.

Roads Must Serve the People.

There is no disposition to criticise the plan, although there are those who believe that the roads should be built to serve industry and commerce rather than to satisfy politically different states that have hitherto not undertaken road construction because of the large expense that would be necessary. Statement is made that the states that have not built roads will now have half the cost of highway building borne by the Federal government, and the distribution of appropriations will not be on the needs of traffic, but on the basis of actual or theoretical transportation of mail.

The states without exception have accepted the conditions specified, which means that they will receive from the nation half the cost of many road building projects. The allotments can only be made for work that is approved by the Office of Public Roads. Estimates have been made of the total distribution of Federal funds authorized by the bills and the aggregate that shall eventually be expended by the government and the states will probably exceed $600,000.000. The funds, however, will be available during the present and the two succeeding years, although the contracts may not be completed during that period.

To Prevent Disruption of Industry.

The object of the government in distributing the trucks and vehicles to its different departments was to prevent the sale of the machines at prices that would disrupt the automotive industry, and as the War Department could not use so large a number a plan was devised for transferring to the Postoffice Department and the Department of Agriculture all that could not be used by the Public Health Service, which is operating the various hospitals maintained for the benefit of veterans of the European war.

According to figures made public the Health Service will receive 1396 machines, the Postoffice Department 10,064, and the Department of Agriculture 27,983, this being a total of 39,443. Considering these for a moment, the Office of Public Roads plans to distribute approximately 20,000 trucks to the different states. No statement has been made of the number that each state would receive, nor is there any practical basis on which estimate can be made, but there is no question that there will be offers made of many more machines than can be practically used by them.

Distribution by Requisition.

No state is required to accept trucks from the department, and distribution shall be, according to statement, on the basis of requisitions. The applications or requisitions have no doubt been received, but nothing is known of them by the public. Some of the trucks are new and some have been used, and these two classes will be included in the distribution. That is, no state will receive all new machines, and the ratio of used trucks will be whatever may be regarded as equitable.

But the distribution of trucks to the

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states creates a situation that is unprecedented and which may retard instead of accelerating road building for this year at least. Practically all of the states have highway departments which supervise the construction and maintenance of state roads and direct the expenditure of the appropriations. While they generally advise and make recommendations to the legislatures, no funds are available for any purpose unless with specific directions for their expenditure, and for this reason there is hardly a state that can find money with which to operate and maintain equipment.

Work Done by Contractors.

With rare exceptions state road construction has been done by contract, the state highways departments preparing specifications and usually accepting the bid of the contractors that will do the work for the smallest prices. The contracts are sometimes made with towns that own equipment—rarely with cities—but seldom do municipalities have the facilities for large undertakings, and experience has proven that work done by contractors is generally cheaper for a given standard.

Because contract work has been the vogue and the states, cities and towns have not the equipment or organization for constructing highways, appropriations made have been made to cover estimated costs. Estimates allow for haulage expense stated prices for vehicles of different capacities, and, of course, a reasonable profit is expected. The contractors, however, base their prices on the expectation of being able to find almost continuous work for their machines and teams. The state that owns its own vehicles and machinery and tools could not engage in general work and for this reason there would be little if any revenue aside from its own construction and maintenance, which could not be continuous.

Operation Would Be Costly.

This being so the upkeep of power trucks owned and operated by a state would be far more than would be the cost to a contractor. This would, of course, be reflected in the actual construction expense of highways. To illustrate, the contractor may own some vehicles and machinery. Should he require additional equipment it is hired. He usually finds this cheaper than owning it, for he does not have surplus idle trucks, carts and tools, at least during the productive season of the year.

The policy of the government is to transfer the trucks to the states, there being no cost other than the expense of transporting them from the places where they are stored, but upon delivery the states must assume the maintenance and upkeep. Assuming for illustration such a state as New York: Obviously the trucks must be operated from bases and located within comparatively short distances from the works. They must be garaged, adjusted and repaired, and kept in good condition if they are to be used. There must be organization that will operate them efficiently.

Must Be Operated by a System.

If sent from place to place and kept and maintained at public garages, service stations and shops, the cost would be much greater than if the trucks were privately owned. If they could be operated through the entire year this statement would apply, and if used only during the late spring, summer and autumn the expense would be largely increased. From one point of view there would be no reason to charge some of the items of cost, such as interest, insurance, taxes and depreciation, but storage, annual overhaul and supervision and administration charges would be larger than those of the privately owned machines. The variable or operating expense would not vary greatly from those of contractors, provided that records were kept and intelligent analysis made with the object of minimizing expense.

As appropriations are made for the construction of highways by states they do not authorize expenditures for establishing and operating garages or service stations or development of operating organizations or maintenance of machinery. If the appropriation bills were sufficiently elastic so that funds could be diverted to these purposes the states could accept trucks in large numbers and probably use them efficiently if the methods of private owners were adopted, but there is no reason to believe that the laws could be so interpreted, even if the legal advisers were prompted by public sentiment to apply them broadly.

Distribution of Other Equipment.

But the Department of Agriculture has requested the War Department to transfer to it highway construction equipment now in France, this including about 1500 tracklaying tractors, about 400 road rollers (both steam and gasoline engined), concrete mixers, road graders, elevating graders, rock crushers, industrial locomotives, industrial railroad cars and tracks, dump cars, steam shovels, hoisting engines, electric motors and numerous other tools and machinery, and there is reason to believe that this will be distributed to the states in the same ratio as the trucks. If this supposition is correct there will be a similar problem to be determined with relation to the care and maintenance of this equipment.

The legislatures of some of the states are now in session and laws can be enacted that will provide funds for maintaining and operating the machinery and tools and authorize organizations for doing work that is now done by private contractors. But this applies to comparatively few, and in some instances there will be no legislative sessions for nearly two years unless specially called. In any event there is little probability of uniformity of state law relative to receiving and operating trucks and equipment that can be obtained at no cost other than transportation.

Must Revolutionize State Policies.

Obviously, the distribution of the vehicles and machinery by the government will stabilize the various industries that produced the units, but it must at the other hand inaugurate entirely different state policies. There is no reason to believe that the states will assume that the acquisition of extremely valuable vehicles and machinery, which in the aggregate may be valued at from $75,000,000 to $100,000,000, as merely temporary, and will use it until unserviceable and then return to the former policies of contract work.

Indeed, there is every reason why the states should enact a uniform law relative to highway construction and maintenance, and should do this as quickly as is possible. As a matter of fact the people today are insistent upon good roads. They are demanding that the nation and states and cities and towns build the best of highways without regard to expense, and they as a whole understand that if the roads are improved they must be maintained so that the fullest economic value can be realized from them. This means that there must be a different policy with reference to highway administration. If the roads wear they must be repaired. To repair highways there must be more or less equipment constantly available wherever roads exist, and if maintenance is by the states there must be organization that will insure work being done anywhere it is needed within the commonwealths.

Would Develop State Department.

Were such a policy adopted there is reason to believe that the road work would increase annually and the state highway departments would eventually become very large—probably the largest of state administrations. This would necessitate the use of many power vehicles and much equipment—perhaps as large a number of units as is to be distributed by the War Department to the different states. But there is no question that it will revolutionize the construction of highways by private contractors.

Of course much depends upon the attitude of the state legislators. If the people are to supply the money for highway building they will have to direct how it shall be expended. Whether or not construction by contract or by state is the more economical has not been definitely established. But one thing is certain. there must be coordination of the national government and the states and this means that what may be regarded as a national policy, or a policy that may be applied universally, must be determined.

ADAMS EXPRESS IS ABLE TO PAY FULL LEGAL LIABILITY.

The National Automobile Chamber of Commerce announces that the Adams Express Co. is able to pay its full legal liability on all claims against it and is willing to do so when its investigation is completed establishing the company's liability. The company does not urge shippers to accept 60 cents on the dollar, but the offer is open to those who prefer to get their money at once on that basis without awaiting the completion of an investigation.

Smith Brothers, 512 Vine street, Lexington, Ky., has been appointed to distribute Armleder motor trucks in Lexington and vicinity.

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NEW ACASON 1½-TON TRUCK COMPLETES SERIES.

The series of Acason trucks, built by the Acason Motor Truck Co., Detroit, is now completed with the production of a 1½-ton chassis, which is to the design that has been standardized in the larger machines. With this unit the series from one to 10 tons, including both trucks and tractors, will meet the requirements of any form of service.

The chassis are constructed with heavy duty Waukesha engines, new type Timken 1½-ton worm drive axles, Blood Bros. universal joints, Detroit Steel Products springs and similar high grade units. The machines are equipped with either 35 by five-inch front and 38 by seven inch rear pneumatic cord tires, or 36 by four inch front and 36 by six inch rear solid tires.

Because of the demand for this chassis for 'bus and jitney service the drive is left side, for this is a more convenient location for the driver to collect fares or drive close to curbing and affords easy access to the vehicles at the sidewalks.

DEALERS WILL NAME NEW GARFORD SALES JOURNAL.

The Garford Motor Truck Co. has begun to publish a monthly sales journal, the name of which will be chosen from suggestions to be made by dealers and distributors of Garford trucks. The initial issue offers a prize for a name. The publication is devoted to the interests of the motor truck industry. The articles embrace a number of phases of this, including manufacture, sales promotion, dealer aids, dealer and distributor activities, advertising, etc.

In keeping with the Garford policy to further the good roads movement, considerable space is devoted to this subject. The publication is profusely illustrated and is printed in two colors. A series of articles by "The Observer," dealing with the various phases of motor truck manufacture, will be a monthly feature.

MICHIGAN GETS 229 WAR TRUCKS FOR ROAD WORK.

State Highway Commissioner Frank P. Rogers of Michigan announced that Michigan's allotment of army trucks for use in highway construction would number 229, or nearly three to a county. Of this number 159 are new, the others having been used in war work.

CONSTRUCTION OF BOLLSTROM PLANT IS UNDER WAY.

Construction on the first unit of the plant of the Bollstrom Motor Co., St. Louis, Mich., will be started soon. No details have yet been announced regarding the truck the company will make.

Work has been started on two new buildings for the Novo Engine Co., Lansing, Mich., which are to be ready for occupancy in 40 days. Production will be increased.

St. Louis Dealers' 450-Mile Truck Drive in Two States

St. Louis, Mo., June 15.—The St. Louis Automobile Manufacturers' and Dealers' Association has carried out a practical demonstration of truck utility that seemingly will be productive of large results. The project was developed by the manufacturers and agents for trucks in St. Louis, and it was essentially the movement of a caravan for 450 miles over highways connecting other commercial centers with this city.

The event was organized by the motor truck division of the association, of which L. H. Amrine is chairman, and according to Mr. Amrine it was from every point of view a decided success. There is much reason to believe that the truck dealers will practically benefit, for the itinerary was through some of the most productive farming sections of Missouri and Illinois, and the object was to demonstrate to farmers the economy of power vehicle freightage.

According to Harry G. Moock, business manager for the National Automobile Dealers' Association, a city's commercial radius is limited only by its good roads, and a dealer's territory is bounded only by his inclination to go after prospects. The demonstration was specified as the "100-Truck Train Expeditionary Force," and it departed from St. Louis, June 9, and was driven to St. Charles, Louisiana and Hannibal, Mo., thence across the Mississippi river into Illinois, to Quincy, Beardstown, Whitehall, Jerseyville and Alton and return.

The truck chassis were equipped with all kinds of bodies, stake platform, ridgepole, express, rear end discharge, van, etc., and some of them were tractors drawing trailers and semi-trailers. Several of the chassis were without bodies. The bodies were in every stage of finish, and each bore a uniform sign with the legend "Reduce Hauling Cost—Ship by Truck." Capt. Robert E. Lee, secretary of the St. Louis association, was in command and the truck master was Preston W. Duffy, who served in Gen. Pershing's expedition into Mexico.

The trucks and trailers were generally loaded with all kinds of freights. Two Traffic trucks were piled high with baled hay. One Republic truck carried a load of tires for delivery at Hannibal, the noon stop for the second day. Another Republic truck, loaned by the Hercules Powder Co., carried metal boxes and kegs in which explosives are shipped. A GMC platform truck was equipped with a Delco light plant and a large battery from which current was drawn to light lamps at the tops of the platform stakes at night, and on each side of the truck was a giant spot light, illuminated by the same battery.

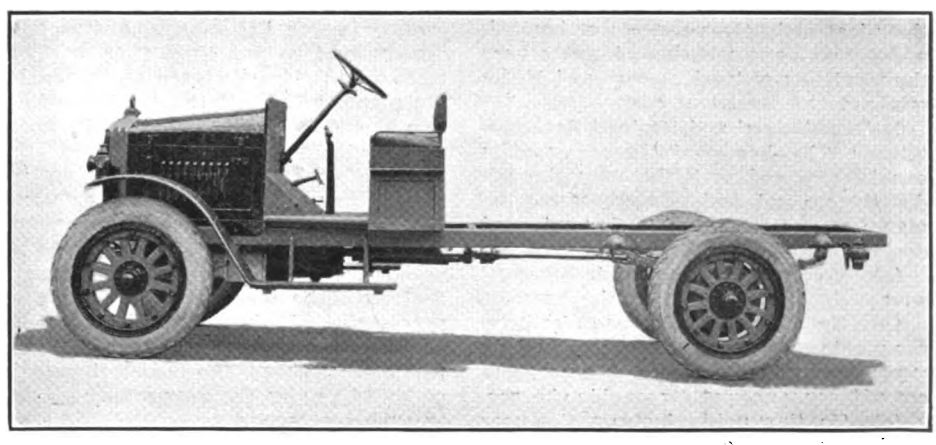
Two All-American trucks were sent by the Weiling Motor Co., each equipped with a Weiling three-style body. One of these was adapted for general express haulage and the other to carry cattle, but instead of animals carried two life-size lay horses. On a 1909 Locomobile chassis, converted with a Hudford unit for truck use, was a fog horn operated by bellows that could be heard a half mile. This was entered by the Aldrich-Stephens Motor Co.

Included in the special body equipment was a GMC truck equipped with a stake body by the Vehicle Top and Supply Co., and a similar body was installed on a Federal chassis by the Bailey Auto Body and Sales Co.

All of the trucks started made the entire trip and there was no accident to the machines. The Service Truck Co., Wabash, Ind., entered two airplanes to serve as scouts and heralds. One of these was damaged making landing the first day and could not continue. The following day the relief aviator, Oscar Brick, went into a tail spin while making landing at Hannibal and the plane fell into a tree. The plane caught fire and the occupant was so badly burned that death ensued.

UNITED MOTORS OPENS BRANCH IN INDIANAPOLIS.

The United Motors Service, Inc., Detroit, recently established a branch at Indianapolis to take care of the trade in that territory. This company gives service for starting, lighting and ignition system equipment manufactured by the Remy Electric Co. and the Dayton Engineering Laboratories Co. and also on Klaxon warning signals.



New Acason 1½-Ton Truck Chassis, This Size Having Pneumatic Cord Tire Equipment, with Solid Tires an Option.

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STANDARD TRUCK SERVICE POLICY

New Recommendation by Committee of National Automobile Chamber of Commerce Now Before the Members for Approval or Modification of the Draft

A NEW standard truck service policy has been recommended by the Service and Repair Parts Policies Committee of the National Automobile Chamber of Commerce. The committee reports that the detailed practises necessarily will vary with the individual policies of each manufacturer, and that, for this reason, it is not possible or desirable to standardize on a definite warranty which can be consistently adopted by all members of the chamber.

The committee, therefore, has offered suggestions of principles and detail practises, with the aid of which definite warranties and maintenance policies may be constructed by each member, according to his requirements.

It is pointed out that, in addition to the manufacturer and dealer being interested in the most efficient and economical operation of the truck, a full measure of co-operation is necessary on the part of the user, who should avail himself of all facilities provided by the service station.

The committee urges that the exact text through which the manufacturer sets forth to the public his policy regarding service includes the detail practises as well as the principles of the manufacturer's relations with the customer.

The suggestions have been submitted by mail to each individual manufacturer for his approval. The committee consists of E. T. Herbig (Service), chairman; H. W. Drew (Packard), W. M. Ladd (Pierce-Arrow), A. B. Cumner (Autocar) and W. E. Britton (Republic). The foreward of the report states:

PRINCIPLES.

1—Manufacturers' Square Deal Warranty: Satisfactory relationship between manufacturer and user is contingent upon mutual good faith. All manufacturers should guarantee to make good all their just obligations express or implied, which will assure each and every user the maximum of truck service and at the minimum of consistent cost.

2—Distributors' and Dealers' Responsibility: The best maintenance results can be obtained with the user through distributors and dealers representing the manufacturer. The distributors' and dealers' service obligations are:

(a) To carry out the manufacturers' square deal warranty with the user.

(b) To maintain adequate facilities for making repairs, adjustments, and do general overhauling in a prompt and competent manner at reasonable charges.

(c) To thoroughly instruct the user in the proper care and operation of the truck.

3—Users' Responsibility: The greatest responsibility for satisfactory truck service rests upon the user. The responsibility of proper operation and care, are entirely beyond the control of the manufacturer and distributor. Upon the user, carrying out consistently and intelligently the instructions on care and operation, depends the success of truck service.

4—Basis of Adjustment Decisions: Definite adjustment policies should be outlined which can be applied to all cases, rather than leaving the adjustment of individual cases to the judgment of individuals. This assures equal treatment to all and avoids misunderstandings, imputations of favoritism and a vast amount of argument.

Recommendations for detail practises and manufacturer's responsibility follow:

Replacement of Defective Parts.

(a) Within a definite period of time after delivery of a new truck to user, the manufacturer will furnish, free of charge at the factory or branch, duplicate parts to replace any parts that are returned to the factory or branch, with shipping charges prepaid, and which are determined by the company to have been defective in material or workmanship, or it will put such parts in condition as good as new without charge.

Repair Parts Service.

(b) Discounts to garages or repair shops will be subject to agreement between manufacturer and dealer.

(c) The manufacturer reserves the right to dispose, within 30 days, all parts returned, without assuming liability, unless covered by shipping instruction or adjustment is accepted.

(d) The manufacturer will refuse to consider claims for or accept for adjustment any parts not supplied by him.

Accessory Service.

(e) For service and replacements on engine starters, batteries, magnetos, generators, carburetors, tires, rims or other trade accessories that are not made by the manufacturer of the truck, application should be made direct to the nearest service station maintained by the maker of such accessory. While not assuming any direct responsibility for articles not made by them, the manufacturer, its branches or dealers, will do all possible to assure the user of a square deal from the maker of these parts or accessories. If, however, the accessory dealer is not adequately represented in a particular locality, the dealer therein is obligated to give the user proper service on such accessories.

(f) Manufacturers shall provide dealers with a list of manufacturers of accessories used on their trucks and a list of service stations.

DISTRIBUTOR'S AND DEALER'S RESPONSIBILITY.

Inspection and Adjustment.

(a) Trucks brought to service stations maintained by factory, branch or dealer will be inspected monthly without charge. The same service will be rendered at points outside of the service station at a regular charge based on the distance. Inspection includes examination and report of the condition of the truck.

(b) Necessary adjustments will be made without charge during the first month after delivery of a new truck to user, provided the truck has not been tampered with nor injured by accident, abuse or neglect. After the first month adjustments will be made at the regular charges of the service station. Adjustment includes only such adjustments as inspection has found necessary to put the truck in good operation condition.

(c) Every dealer is expected to give the same inspection and adjustment service on any truck made by the manufacturer without regard to the territory in which it was bought.

Repairs, Replacements, Etc.

(d) All work not included in inspection and necessary adjustment or installation of replacements will be charged for at regular rates.

(e) When any charge work is to be done and the cost can be estimated in advance, the user, upon request, will be advised of the approximate or maximum amount of the charges before the work is begun.

(f) When it is necessary, for the convenience of the user, to render service at a distance from the service station, the time spent by employees going to and from the service station, the time job will be charged for at the regular rates of the station, together with all proper expenses of making the trip, cost of shipping parts, if any, and other necessary incidental expenses.

Overtime Work.

(g) Any overtime, holiday or Sunday work done upon the request of the user will be charged for at the regular overtime rate.

Instruction.

(h) Personal driving and maintenance instructions will be given to all new truck users without charge. All other personal instructions will only be given in accordance with the agreement between the customer and the dealer at the time of purchase.

Repair Parts.

(i) The dealer will be required to maintain a minimum stock of both "current" and "service" parts as specified by manufacturer.

(j) The dealer will be required to furnish an inventory of current and service parts upon request. The manufacturer reserves the right to send an auditor to verify inventories.

(k) Stocks of parts shall be designated as follows:

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1—**Current Parts**—All parts used in trucks of models being produced by the factory.

2—**Service Parts**—All parts for models no longer being produced by the factory and which have not been superseded by other parts that are interchangeable with them.

3—**Obsolete Parts**—Parts that have been superseded by other parts that are interchangeable with them.

Return of Parts.

(l) Parts claimed defective must be returned to the factory with shipping charges prepaid, within 10 days from date of replacement. The date when defect was discovered, manufacturer's number of the truck and owner's name and address must be given on tag attached to part.

(m) Obsolete parts may be returned only by individual agreement with the manufacturer.

(n) Surplus parts may be returned only by individual arrangement with the manufacturer. All parts shipped to the manufacturer by dealer shall have transportation charges prepaid and be properly tagged.

User's Responsibility.

The entire responsibility for five commonly neglected features of motor truck operation rests with user. These are:

Lack of regular inspection.
Lack of intelligent lubrication.
Loose nuts and bolts.
Overloading.
Overspeeding.

It is impossible to over-emphasize the importance of these matters which are beyond the control of the manufacturer and which the user must recognize to be in the nature of an obligation on his part deserving of the most careful consideration if successful operation is to be maintained.

The manufacturer provides an efficient machine capable of successful operation for a period of years, but when the truck is installed the responsibility passes to the user as in the case of any other practical utility which cannot be of infallible construction.

The manufacturer and dealer are interested in the most efficient and economical operation of the truck, but a full measure of co-operation is necessary on the part of the user, who should avail himself of all facilities provided by the service station.

TRUCKS WITH WATER TIGHT BODIES HAUL FISH OIL.

Federal trucks with special water tight steel bodies have been purchased by the Monterey Fish Products Co. These trucks take fish or fish oil to San Francisco, a haul of 150 miles, as well as to other points. Congestion has made it almost impossible at times to carry the product by railroad, and, because of its perishable nature, truck transportation was decided upon.

The Continental Motors Corporation, it is reported, will spend about $500,000 in additions to the Muskegon, Mich., plant and adding new equipment.

Truck Registration in Bay State May Be $10 a Ton

Opposition against a great increase in license fees for motor trucks in Massachusetts has proved so vigorous that a fair measure probably will be adopted. It now appears that the charge will be on the basis of $10 per ton. The lower branch of the Legislature has passed a bill embodying the $10 fee and it is not likely that the Senate will change it.

Early in the session there were hearings on the question and the owners of trucks were not very numerous at first. So it seemed as if the opposition was centered in the dealers. At least that is what one of the members of the Legislature favoring a big increase intimated.

After one committee got through the work it went to another. And again the fight was continued. Finally the men making the protest woke up to the fact that the way to play politics practically is to go out and get the voters in the home towns to show some signs of life.

As a result there were a lot of letters and some telegrams sent to different members of the Legislature, telling them a few things about what was in the air.

When the figures were printed showing the comparisons between the present fees, the ones the dealers favored, the highway commission's plan and the legislative committee reports, it was evident that the latter was too high. Plans were made then to go after the measure and kill it entirely.

So a compromise was really reached, and rather than get no increase, possibly, the members of Ways and Means Committee decided to play safe. The result now will be a fair measure, unless there is some change in the upper branch.

MOTOR SALES AND FINANCE CORPORATION IS FORMED.

With $500,000 capital fully paid in the Motor Sales and Finance Corporation was recently organized in Sioux Falls, S. D. The company has taken over the general distribution of Kalamazoo trucks throughout South Dakota, North Dakota, Minnesota, Nebraska and Western Iowa. General offices have been established at 321 South Phillips avenue, Sioux Falls.

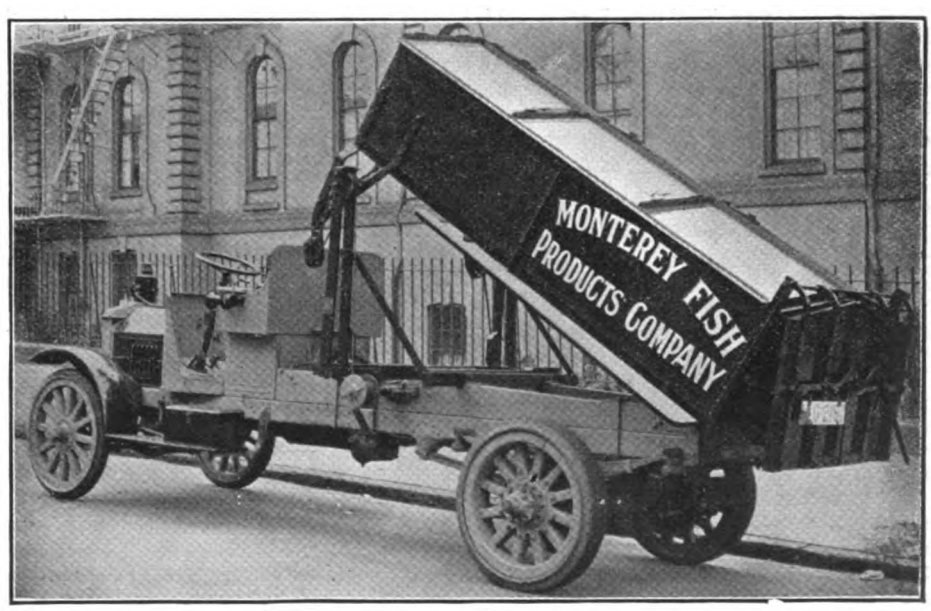
The officers and directors are: President, C. J. Johnson; vice president, W. I. Thompson; secretary, Eugene Reiley; treasurer, M. C. Smith; assistant secretary, R. L. Harris. They constitute the board of directors and O. A. Kruse is sales manager.

The company is planning a vigorous sales campaign and will soon have 100 truck salesmen in the field, prepared to assist sub-distributors in the disposal of trucks. The company will be prepared to finance dealers to the extent of 80 per cent. of their purchases and to sell trucks to customers on time if desired.

President Johnson is also vice president and a director of the Kalamazoo Motors Corporation, maker of Kalamazoo trucks, and will be in a position to secure trucks for his dealers throughout the country. Kalamazoo trucks are built in 1½, 2½ and 3½-ton models. The price includes top, cab, windshield and a complete electric lighting and starting system.

DETROIT-WYANDOTTE MOTOR TRUCK PLANT IS SOLD.

The Detroit-Wyandotte motor truck plant in Wyandotte, Mich., has been sold by the Security Trust Co., Detroit, trustee in bankruptcy, to John J. Marx and Henry Roehrig of Wyandotte. Other assets of the company were disposed of about a year ago. The creditors, it is expected, will receive about 50 cents on the dollar after liquidation of a mortgage on the real estate.



Federal Truck Chassis Equipped with Power Hoist and Special Body Designed for Fish Oil Delivery from Monterey, Cal., Distances of 150 Miles from the Works.

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FOREIGN TRUCK MARKET LIMITED

New York, June 17.—That the foreign potential market for the power truck industry must be in other nations than England, France and Italy for several years at least, is the conclusion that must be reached after a careful analysis of the information placed before the members of the National Automobile Chamber of Commerce by C. C. Hanch, who made an investigation abroad covering a period of nearly four months. This statement was presented at a meeting of the export managers of the different concerns associated with the N. A. C. C. and it has been substantiated by facts obtained from other sources.

Mr. Hanch's belief is that for two years at least these countries will practically prohibit the importation of automobile vehicles, and that for a considerable period following this heavy import duties will be imposed. This means, if one accepts the conclusion at its face value, that the American automotive industry must turn its attention to the market of other nations.

There is no probability that Germany, Austria, Belgium, Russia or any of the smaller and newly created nations will have the resources to purchase either trucks or cars in considerable numbers, and for this reason the South American nations, and probably some of the African and Asiatic countries, will be the principal markets for several years.

Will Develop Their Own Industries.

The policies of England, France and Italy is to develop their own industries as rapidly as they can. These policies may be applied to their colonies as well. The demand for power vehicles will never be as great as obtains in America, because conditions differ from every aspect. The population is far greater to the square mile of area and the distances for travel are correspondingly short, and as a whole the resources of the people are small as compared with those of America.

During the war England, France and Italy bought trucks in large numbers simply from the fact that transportation must be had at any price. But since the signing of the armistice there has been comparatively few sales of machines, and as the prospects for peace improved the different governments have directed attention to the demands of their own industries for the largest measure of protection that is practically obtainable.

The prospect from the view point of the American automotive industry is not encouraging. There was no reason to assume that the markets of the Allied nations would be open and there is seemingly common knowledge that the government of these countries would have many thousands of trucks and cars that would eventually be disposed of to what would be regarded as the best advantage of the manufacturers.

Have Carefully Developed Trade Policies.

England was one of the first to consider the effect upon the automotive industry of the cessation of hostilities and to plan a policy that should prevent the destruction of large enterprises by the sale of the motor equipment used in the war. Careful thought was given to the disposal of trucks and cars in excess of government needs, and there was an understanding at least between the government and the organizations of the industry that because of the cooperation in war work the fullest degree of protection should be given after the concerns resumed normal commercial production.

The French government has developed a very similar policy with reference to the automotive industry for that country. There is less knowledge of the determination of the Italian government, but there is every reason to believe that it will be similarly protective.

The details of conferences and communications between Mr. Hanch and the representatives of the automotive industries of England, France, Italy and Belgium were summarized in the report made to the National Chamber of Commerce, and while these are interesting as defining the views of the foreign manufacturers and establishing the basis for the different governmental policies, there is no ground to believe that there will be any change.

No Importations of Cars and Trucks.

Generally speaking one can safely assume that each nation will do all that is practically possible for the rehabilitation of its own industries and this will mean that nothing will be imported that can be produced. This is very important from the viewpoint of each country, because only by development of industry to the greatest degree possible can there be recovery from the losses incurred by the war.

Besides protecting its own industries each nation will make every practical endeavor to increase its foreign trade and this will mean that there will be the strongest kind of competition in the markets of other countries as soon as domestic demands have been met. In fact, with assurance of domestic protection there is probability of this foreign competition being developed very quickly, and for this reason there is need of the American industry directing its activities to exploitation of markets abroad without delay.

Those who assume that the other governments have been awaiting developments and that a considerable time shall elapse before there will be sufficient production to supply their domestic needs, and that there will be but little competition for American manufacturers, had best study the conditions carefully and be prepared for immediate action by foreign competitors supported by reciprocal governmental policies and, of course, the strongest possible activities of carefully coordinated commercial organizations.

These statements are not made to discourage the American automotive industry, but with the object of urging upon it the necessity of quick and concerted action, and the need of an immediate understanding with the government so that there shall be the fullest degree of intensive cooperation that will be necessary in commercial development abroad.

Americans might just as well understand that the automotive industry must depend in no small measure upon the exploitation of foreign markets, and that while there is no reason to anticipate any considerable domestic demand for imported vehicles, the growth of the industry will be greatly retarded unless exportations shall be constantly increased in excess of pre-war figures.

TEXAS WAXES ENTHUSIASTIC ON GOOD ROADS BUILDING.

Next to the oil excitement, Texas is especially enthusiastic on the subject of good roads. R. J. Windrow, state highway engineer, announces that there have been voted by the taxpayers of the different counties since Jan. 1, 1919, bonds to the amount of $50,000,000, most of which are to be used in the construction of good roads. In addition to this sum there are pending bond issues for the same purpose amounting to $22,000,000 and a state good roads bond issue of $75,000,000 to be voted on Nov. 4. Besides this $147,000,000, assured and prospective, there are big sums from Federal and state funds to be added.

So great is the good roads movement in Texas that the construction materials available are not equal to the demand. An enormous development of gravel pits and quarries is necessary in order to supply the materials necessary for the building of the hundreds of miles of highway that are planned. Tractors and road graders are being purchased in large numbers to carry on the construction.

EMPIRE AXLE NOW SUBSIDIARY OF WATSON CORPORATION.

The Empire Axle Co., Dunkirk, N. Y., has completed its reorganization and is now a subsidiary company of the Watson Corporation of Canastota, N. Y. Incorporation has been made under the laws of New York, with $400,000 capitalization. The active members of the organization are: O. F. Hakes, president and assistant treasurer; E. deH. Caldwell, vice president, chief engineer and assistant secretary, and R. W. Foley, sales and advertising manager. Plans are being made for a considerable increase in the capacity of the Dunkirk factory.

The company's new catalogue is made up of the loose leaf type, so as to permit insertion of specifications and data concerning new designs as soon as they are perfected and tested. This style of catalogue also allows the company to include a complete parts price list supplement giving detailed photographs, descripiton, number and price list of parts.

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Clark Equipment Co. Builds Homes for Employees.

The Clark Equipment Co., Buchanan, Mich., maker of steel disc wheels, drills and tools, has spent $225,000 to provide proper housing for its employees. The company bought a tract of land, platted it into a subdivision and, as a starter, put up 45 bungalows and houses. In price the houses ran as high as $4500, which would be the equivalent of $7000 to $8000 in a big city, where land is higher. To head off speculators and keep profiteers from grabbing the unearned increment, the company, in fixing prices, added 100 per cent. to the actual cost of the lot and five per cent. on the cost of the house.

The purchasing employee paid on terms arranged to suit his purse, so much down and so much in installments, on an amortization plan that paid off both principal and interest, leaving the property free at the end of a period of years.

Knock Off a Part.

After five years of payments have given the purchaser an equity sufficient to guarantee his good faith in carrying the deal through to the end, the 100 per cent. on the lot and the five per cent. on the house will be remitted and applied on the account, so the buyer will get his home at actual cost price.

In most housing plans, so far, the employees have proceeded on a rental basis. Of 213 "company housing" projects studied by the government two years ago, only 33 built and sold the houses to the employees. Town planning had been ignored in the bulk of cases. Only 15 per cent. of the projects had been mapped out by landscape and architectural experts.

When the Clark company came to sell its houses, it met with an interesting experience. It found the great demand was for the higher priced homes, instead of for four-room bungalows. The employees wanted homes not only of good architectural lines, but with plenty of room for expanding families.

"Coop" Houses Scorned.

The stabilized workman, who was ready to settle down and plant his own vine and fig tree, wanted a place where he would not be "cooped up." The larger houses went like hot cakes.

The company took the hint and announced that any purchaser could buy the lot, pick his own plan for a house and the company would build it, as long as it was not of freakish design. Several have done this.

So far the company has put in about $225,000 on housing development. Its officials say it has proved one of the best phases of their welfare work.

As part of the community development the concern has built a theater. Its plant is in a park, and gardeners and hot houses keep it beautified with flowering plants and shrubbery. It has a gymnasium, a plant orchestra and an amateur theatrical association.

Workers Share in Profits.

Two years ago the Clark company inaugurated a plan of combined stock sale and profit sharing. Employees were allowed to subscribe for stock in an amount equal to 10 per cent. of their salary. They bought in "lots," each "lot" consisting of one share of preferred and one of common stock.

No one could buy more than four "lots" in any one year. With each "lot" was given an employees' participating certificate, which was entitled to a dividend of six per cent. a year, or higher, if the directors so decided.

The idea was that the workman who held stock was entitled to a bigger dividend than the shareholder who merely invests his cash. As the plan has worked out shareholder employees last year got a seven per cent. dividend on their preferred and $12 on each participating certificate.

In addition, at the end of the year there is a distribution dependent upon profit. The dividends to participating employees thus have gone as high as 65 to 70 per cent. on their investment.

TRACTORS AND SEMI-TRAILERS ECONOMICAL EQUIPMENT.

With two two-ton truck chassis as tractors and three six-ton Fruehauf semi-trailers the Stroh Casting Co., Detroit, has developed a very efficient transportation service, minimized standing time and reduced haulage costs very materially. Claim is made that at least six two-ton trucks would be necessary to haulage the same tonnage.

President Bernhard Stroh, Jr., of the company says: "By having one trailer at the plant loading, while the other two are being hauled, we have been able to reduce the time of the two tractors to minimum. We haul 50 to 60 tons a day, the average haul is seven miles and we make about 10 trips daily. In our opinion we are hauling our product more economically than with any other method and we have tried them all.

General Motors Plans Large Canadian Production.

General Motors of Canada, Ltd., of which R. S. McLaughlin is president, has announced part of its extension policy for Oshawa. It was announced some time ago that General Motors was erecting a large plant at Walkerville, where engines, transmission gearsets and all heavy parts of motor cars used in the Oshawa assembling plants will be manufactured. These operations are going ahead rapidly and the two units now well under way are 160 by 600 feet.

For the time being engines, transmissions, etc., for McLaughlin cars, Chevrolet cars and trucks and Oldsmobile cars and trucks will be made in Walkerville. But without any delay, castings, engines and transmission for Samson tractors and GMC trucks will also be turned out.

In Oshawa, where McLaughlin and Chevrolet cars are now being made, tremendous alterations and extensions are planned, and an entirely new plant, 80 by 400 feet, four stories, will be erected to assemble Oldsmobile cars and trucks. It is planned to have this start production this fall.

In addition to this plant, it has been decided to erect a central shipping building, 80 by 200 feet, with a capacity of 56 freight cars, under roof, so that inclement weather will not handicap loading operations. In conjunction with this central shipping station there will be a large storage building with a capacity of 1000 cars. This building will be 80 by 400 feet, four stories. The third building to be erected is a large central enameling plant equipped with the most modern facilities for efficiency and mammoth production. This building will be 80 by 300 feet, three stories.

There will also be many alterations to the present plant equipment of the General Motors unit at Oshawa.



Two-Ton Truck Used as a Tractor for a Six-Ton Semi-Trailer Unit by the Stroh Casting Co., Detroit. The Company Has Three of These Tractors and Semi-Trailers in Its Service.

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TRACTOR HAULS 40-TON LOAD ON BIG SEMI-TRAILER.

A giant marine engine cylinder, weighing 40 tons, said to be the heaviest load ever placed on rubber tires, was recently carried by a trailer-truck, owned by Allen Brothers, Los Angeles, for 23 miles over city streets and country highways without any noticeable effect on the tires. Trucking contractors had the trailer especially designed and built, with a carrying capacity of 100,000 pounds. The truck itself weighs 12,700 pounds and the specially designed rear wheels weigh 2050 pounds each. The wheels of the truck are equipped with Goodrich solid truck tires. The truck is shod with four 40 by 10-inch tires and the trailer with two 40 by 12-inch tires.

The first load carried by this giant truck was conveyed from the iron works in Los Angeles, where the engine cylinder was cast, to a shipbuilding drydock in San Pedro, a distance of 23 miles, in two hours and 45 minutes. In order to secure the proper traction the truck was ballasted with an engine stand weighing nearly seven tons.

Among other big tasks scheduled for Allen Brothers' truck is transportating rifle barrels for the mammoth 16-inch coast defense guns to be installed in Ft. McArthur, near Los Angeles. The two-wheeled trailer is pulled by a 6½-ton Packard truck.

The demonstration proves that the power of solid tires to carry ponderous loads is almost limitless. It further points out that truck and tire manufacturers have solved heavy transportation problems and that an adequate highway system is the only drawback to extensive heavy transportation over the roads of the country.

KELSEY WHEEL MAY EXCEED LAST YEAR'S OUTPUT.

The 1919 output of the Kelsey Wheel Co. is expected to be 800,000 sets of wheels, as compared with 690,000 last year. In addition to automobile wheels the company is now making automobile bodies and brake bands.

KALAMAZOO MOTORS BUYS LANE MOTOR TRUCK CO.

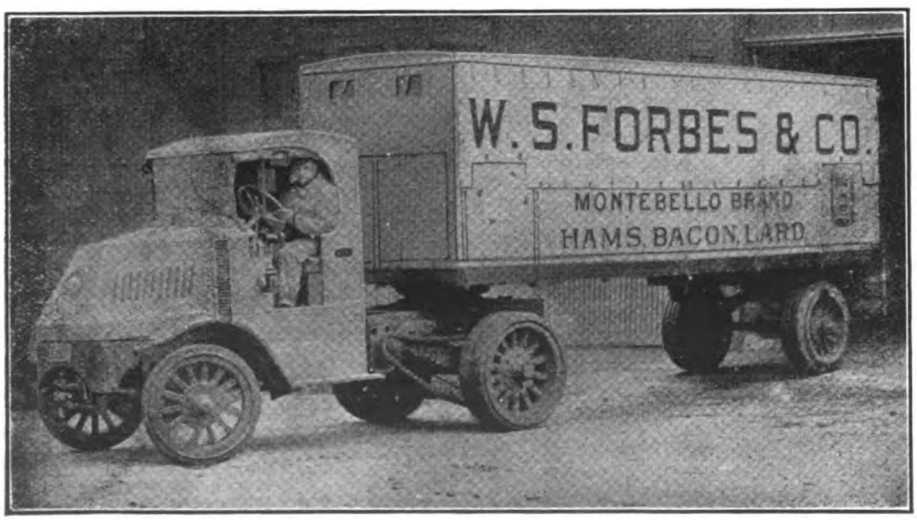
The Kalamazoo Motors Corporation, capital $250,000, fully paid in, has bought the physical assets of the Lane Motor Truck Co. and will continue to manufacture the same model trucks as the Lane company has been building. The officers are: President, H. A. Crawford; vice president, C. J. Johnson; treasurer, William B. Milham; secretary, R. M. Gregory. The board of directors consists of the president, vice president and treasurer and the following: A. L. Pratt, John McKinnon, H. P. Kauffer, V. T. Barker, Joseph Brown and Frank Milham.

The company will occupy the buildings used in the past by the Lane company, and is proceeding with the work of reorganizing the plant with a view of largely increasing the output.

The new truck will be known as the Kalamazoo, and will be made in three sizes—1½, 2½ and 3½-ton models—thus giving the dealers a wide range of sizes that will serve practically all classes of business. The present models were designed and perfected by L. W. Coppock and have been on the market for the last three years, being rated among the best in use in America. Actual data received from the various owners, the company states, prove that their upkeep has been very low.

A special feature worked out in the manufacture of these three sizes of trucks, which will appeal to the dealers and to fleet owners, is the interchangeability of parts in the three models, as practically 60 per cent. of the parts used in the three sizes are interchangeable. The company states it was the first to adopt the electric starting and lighting system and numerous other improvements have been added. Should the showing during the next three months be favorable the company will immediately proceed on a production campaign to build at least 1000 trucks a year, which will be possible by enlarging and rearranging the present plant.

Kalamazoo now has nine manufacturers of automobile parts and accessories.



Mack Tractor and Semi-Trailer Having 15 Tons Load Capacity, Operated by W. S. Forbes & Co., Provision Dealer, Richmond, Va.

NEW ENGLAND STERLING MOTOR TRUCK HAS NEW HOME.

The Sterling Motor Truck Co. of New England, distributor of Sterling trucks, has opened combined sales and service quarters at 1031 Commonwealth avenue, Boston, in charge of F. O. Johnson. This is an important addition to the automobile trade district on Commonwealth avenue.

The Sterling company has built up a very successful business in medium and heavy duty trucks, but the business heretofore has been conducted with an office in down town Boston and a service station in Charlestown. With the new building the company now has everything under one roof. The salesrooms are of generous proportions, affording ample room for an attractive display of the Sterling models. The general offices are in one section of the salesrooms.

In the rear of the building is the service station and the parts department. The service department is in charge of skilled mechanics, who know every detail of construction. The parts department is a model of efficiency, with every part indexed and stored in convenient bins so that it is only a matter of minutes to secure anything desired by a customer.

Sterling trucks are built by the Sterling Motor Truck Co. of Milwaukee in four models of 2½, 3½, five and seven tons capacity. The motors are all of the four-cylinder type and three different sizes are used in the four models. Magneto ignition is used and multiple disc clutch. Pressed steel, wood inlaid, flexible frames are a feature and large springs and sturdy brakes are installed on all models.

SAYS ROADS ARE IMPROVED TO AID MOTOR TRUCKS.

G. C. Frey of the Kissel Motor Car Co. says that in and around all communities on motor truck routes it is noticeable that all roads have been improved to enable motor trucks to maintain consistent speed as well as to decrease depreciation. "Thus the motor truck," he adds, "not only makes communities independent of any one particular line of transportation, but serves the interests of any one community efficiently and economically. These improved roads increase realty values along the routes, creating a higher standard of public improvement and fanning into life a community pride that is reflected in the prosperity of its residents.

OMSK GOVERNMENT MAY BUY MOTOR TRUCKS HERE.

The Russian embassy at Washington has announced that the new Russian government at Omsk has decided to place in the United States markets the greater part of orders for military supplies, which are estimated at $164,000,000, for the next 10 months. It is likely that a great many motor trucks will be included in the orders.

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FREE TRUCK INSPECTION SERVICE

System of Care Established More Than Three Years by the J. W. Maguire Co., Boston, Independent of the Attention of the Manufacturer

LUBRICATION is vitally essential to truck service life. There can be no issue taken with this statement. But emphasis should be made that it is more necessary with trucks than practically any other form of machinery because dust or other abrasives will accumulate and adhering to lubricated surfaces will cause excessive wear. No truck chassis is designed without very careful thought of the means of protecting all wearing parts, and while the best results are obtained by completely enclosing them, this protection cannot be applied to all moving elements.

Were a truck chassis housed so that there would be no material accumulations of dust, and were it systematically cleaned, the life of the unit would be very greatly increased as compared with what is realized in average use. There is little doubt that a truck so sheltered would be serviceable after 20 years usage, and with ordinary care its life might be 50 per cent. more. Yet the average period of serviceability of a truck is estimated to be 100,000 miles driving or approximately five years.

Extreme care is exercised by the designer to insure adequate lubrication. But when the machine has been transferred to the owner he and the driver must assume the responsibility of providing oil and grease in sufficient quantities to prevent excessive wear. Good judgment dictates that oiling and greasing should be done systematically and to a formula, so that there should be no neglect through oversight or carelessness.

Lubrication Left to Driver.

Too often the owner leaves to the driver a work that is more important than any other expected of him, and takes for granted that this work is done because of orders given. The driver may have extra hours work; the owner may believe that another load at the end of a day means a considerable increase of profit and assumes that the driver will willingly extend his hours of labor. The driver, however, unless directly under supervision, and unless there is a record by which his car can be checked, may neglect the oiling and greasing at the end of the day, and will seldom reach the garage mornings so he can work on the truck before starting with it.

The ideal arrangement of hours is such that the driver will have a specified period for work on his vehicle each day, but rarely will owners assent to this plan because they mean that the machine shall have the greatest degree of productiveness and do not understand that there is large economy in good upkeep and systematic maintenance.

Obstacles to Manufacturers' Inspection.

Truck manufacturers in some instances have made provision for inspection of machines at the service stations of branches or dealers, and have developed organizations that are intended to do this with regularity, but these have been only reasonably successful because owners frequently believe that such examinations are proposed because the manufacturers are suspicious of the use made of machines and seek evidence that will justify evasion of responsibility for guarantee made in the sales contract, or the owners assume that the degree of care recommended is not necessary.

It is a fact, however, that some manufacturers have inspection plans that have been proven very economical, and when these are understood and are made use of by owners the operation and maintenance cost of the trucks have been considerably reduced and the efficiency more or less increased. There is nothing mysterious of these inspection systems. They are simply periodic examinations of the machines by men who are expert in their knowledge and who determine whether the condition of the trucks is up to the standard that will be most productive and valuable to the owners. They do not establish responsibility. The reports are made impartially and submitted to the owner, who can do whatever may seem necessary to obtain care that will afford the degree of care desirable.

In some instances the organizations are maintained by manufacturers and in others by branches or sales representatives, and occasionally the manufacturer and dealer may operate independently or unitedly, dependent upon the policies and the contracts existing.

Manufacturer's and Dealer's Service.

The J. W. Maguire Co., Boston, agent for New Hampshire and Eastern Massachusetts for Pierce-Arrow trucks, is now operating a system inaugurated more than three years ago, and which, while independent of, is coordinated with the service of the Pierce-Arrow Motor Car Co. The Pierce-Arrow company's service is general the country over, but that of the Maguire company is localized in the territory specified, and its dealings are direct with the owners and not through the factory organization.

There are upwards of 700 Pierce-Arrow trucks in the Maguire company's territory and all of these are inspected save the large fleets that are under the super-

J. W. MAGUIRE COMPANY
SERVICE DEPARTMENT

Estimated Miles per Week	Instrument Reading	Total Mileage

TRUCK NO. _____
DATE _____

INSPECTOR .....
OWNER .....

ITEMS MARKED (X) Required Attention and were Adjusted.
ITEMS MARKED (O) Required Attention but were unable to Adjust.

ITEMS	1	2	3	ITEMS	1	2	3
MOTOR				Universals			
Suspension				Case, Supports, Bearings			
Bearings				Gear Shift			
Valves				Shafts,-Intermediate, Flexible			
Push Rods				Rods,-Torque, Radius			
GOVERNOR				STEERING ARRGT.			
OILING				Pivot axles,—Levers			
Tank—Pipes				Rods,—Cross, Side			
Pump				Column,—Lever			
RADIATOR				REAR AXLE			
Water Pump				Oil Level			
Fan Belt				Worm Thrust			
CARBURETOR				Drive,—Plates, Shafts			
Gas Level				CHASSIS			
Float Needle				Foot Brake			
Air Valve				Hand Brake			
Tank,—Feed Pipe				Front Springs & Supports			
Primer, Pipes				Rear Springs & Supports			
IGNITION				Wheels,—Bearings			
Magneto				Frame, Sub-Frame			
Coil,—Battery				Cab			
Plugs,—Wiring				Dash, Guards			
CLUTCH				BODY & HOIST			
Throw Out				Hyd.—Cyl., Pump			
Spring Thrust				Oil			
TRANSMISSION				Chains. Clutch			
Lubrication				Body			

MEDIATE ATTENTION

The Inspection Record of the J. W. Maguire Co., Filled in Triplicate, a Copy of Which, with Recommendation, Is Sent to the Owners Monthly.

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vision of distinct organizations. In other words, the system benefits all owners who have not their own service stations and expert mechanics. The inspecting is done by two men, one who covers Boston and its suburbs and the other the outlying territory within a radius of 60 miles, they examining the trucks approximately once a month, and those at greater distances are inspected from four to six times a year. The men have no regular schedule for their work, but arrange their daily itineraries so that they will meet the trucks in service and drive and examine them so far as may be necessary to learn every detail required in the record.

System Is Very Thorough.

The accompanying illustration of a report form shows that the examination covers the engine, governor, oiling system, radiator, carburetor, ignition system, clutch, transmission system, steering gear and linkage, rear axle, chassis and body and hoist. Each of these covers different items and collectively they include practically every construction unit and part. The inspector examines the machines systematically and careful attention is given to adjustment and to lubrication.

Emphasis is made that the chassis must be oiled and greased to what is known as the Pierce-Arrow standard and that unless this care is given there will be destructive wear that will be reflected in expensive upkeep and increased cost of operation and greatly lessened service life. The report indicates the units and parts that required attention and were adjusted, and those which were not adjusted, this applying to work that could not be done with hand tools and which must be done in a shop or garage with more complete facilities. These are shown in the first and second columns of the report form. In the event that work is imperatively necessary this is noted in the third column. This, however, is seldom done.

Report Made in Triplicate.

The report is made in triplicate on two white and one salmon color sheets. The inspector sends one white and the salmon sheet to the office of the company and retains the second white sheet in his record book. In the event that small replacements are made by the inspector from a stock he carries with his tool kit, these are noted on the report and from these notes charges are made the owner. Unless the inspector makes replacements there is no cost attached, and then only the prices of the parts.

The reports are carefully analyzed and copies are sent the owners, and when necessary they are accompanied by such recommendation as will insure the care and maintenance as will insure the average service life of the vehicles. In the event that a condition is such that a change in care is desirable the reports are noted each month and the owners are informed whether or not there is improvement. The owner is advised that he can make a change. No responsibility is placed, that being left to the owner to determine. But he is informed that he will be the loser if the truck is not kept adjusted and lubricated.

Neglect of Truck Is Shown.

The inspection reports also establish whether or not the trucks have been neglected, and should there be claim made relative to a condition for which the manufacturer is maintained by the owner to be responsible the reports will be the basis of judgment. The other report is filed, the one for comparison by months or periods and the inspectors' books are kept for reference.

The inspectors do emergency work in the sense that the one may be assigned to the other's territory to do what may be imperatively necessary, and frequently what may be begun by one man is completed by the other, so there is the judgment of two men instead of one to be applied to the condition of the truck or trucks on which they work. The reports are made impartially and there is no reason for the drivers to feel that they are not fairly dealt with. In fact, they are made to understand that if they are guided by the advice of the inspectors their work will be made easier and they will be more efficient employees.

Inspectors Ride on Trucks.

The inspectors necessarily have to drive the trucks to learn their condition and considerable of their traveling is on the machines. For this reason they cannot use cars to good advantage, for they would have to leave the machines whenever a truck was inspected and return considerable distances to them. This would reduce the time they now give to work, and by their knowledge of the owners' service they can arrange to meet and leave trucks so that practically no time is lost.

The Maguire company has at times found owners indifferent and rare instances antagonistic to accepting inspection. They are informed that his service is what they have paid for and entitled to when a truck is delivered and that the purpose is to insure to them continued utility of the machines at the lowest possible cost. They learn by practical experience that they substantially benefit and that there is varying economy obtainable if they will follow advice that is based on careful study of the reports. The inspection is continued without regard to the period of service.

The inspection service of the Pierce-Arrow company is also a check that can be studied to advantage. The main object is to follow the manner of lubrication, for statement is made if this is done systematically there will be without doubt a good knowledge of the mechanical condition and adjustment and restoration whenever needed.

STANDARD TO BRING OUT ONE-TON TRUCK MODEL.

The Standard Motor Truck Co., Detroit, is about to bring out a one-ton model. Its series now includes two, 3½ and five-ton vehicles. It is announced that production of the new size will begin in time so that the first deliveries will be made by Aug. 1.

GOODRICH NEW ENGLAND DEALERS HOLD CONVENTION.

New England representatives of the B. F. Goodrich Rubber Co. recently held a two-day convention in Boston, with executives present from the Akron factory. Arrangements for the business sessions and for the entertainment were in charge of Fred Moore, manager of the New England branch, and Hayes Krimmel, truck tire sales manager. The sessions were devoted in the main to discussion of truck and tire equipment. The meetings were at the Boston branch store on Boylston street and the convention dinner was at the Copley Plaza hotel.

The speakers included S. V. Norton, manager of truck tire sales for the United States, who spoke on "The Goodrich Truck Tire;" E. C. Tibbitts, Goodrich advertising manager; H. H. Eager, assistant manager of truck tire sales; A. H. Leavitt, manager of pneumatic truck tire sales, and E. J. Hughes, manager of sales personnel.

E. C. Lowe, New Bedford, Mass., the oldest Goodrich distributor in New England, spoke for the dealers. Mr. Krimmel and Mr. Moore also spoke. The convention was ended with a theater party.

HUDSON RIVER TUNNEL BILL IS PASSED BY SENATE.

The United States Senate has passed the bill introduced by Senator Edge of New Jersey, giving the states of New York and New Jersey the right to enter into a compact for the joint construction of a vehicular tunnel under the Hudson river. Federal legislation was considered necessary to meet a provision of the Constitution that no state, without the consent of Congress, enter into any pact or agreement with any other state.

Under the bill Congress would consent to the compact between the two states for the construction, repair and maintenance of a tunnel or tunnels between the Borough of Manhattan, New York City, and Jersey City for the joint operation and for regulating and collecting all tolls and charges and the regulation of all other such details.

ESSENKAY PRODUCTS CO. ASKS CO-OPERATION OF ENGINEERS.

"There is no question in the minds of engineers and truck owners that the most troublesome thing they have on their hands in transportation problems today exists in tires," states a bulletin issued by the Essenkay Products Co., Superior street, Chicago, maker of the Essenkay Tire Filler. "If any mechanical part of a truck's equipment gave the trouble, within the same mileage, that tires do, then such equipment would be subjected to very severe criticisms and would not be regarded as a productive investment."

The company announces that it has been devoting its efforts to research along truck tire problems, and invites the cooperation of the engineering industry interested in this particular work.

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SAYS AMERICAN TRUCKS ARE NEEDED IN EUROPE.

"There is a great demand for motor trucks," declares C. Lacroix, factory representative of the Acason Motor Truck Co. in France, in a letter to Vice President Harry Conlon of the Acason Motor Truck Co., reporting on the Lyon's fair, which he attended.

"Every truck man was busy at the Lyon's fair," Mr. Lacroix writes. "The interest in American made trucks was intense. The work of those American trucks that were sent over by the American government for war work caused more than curious interest.

"On my return to Paris I found our Belgium representatives sadly in need of trucks. The government of Belgium did not put any embargo on any imported goods from the outside and I urge that you let us have as large an allotment for Belgium as is consistent with your manufacturing plans.

"Trucks are needed in reconstruction work here in Europe. We need trucks that will give real service. From all reports Acason trucks have stood up exceptionally well and this information has become known quite generally over here. It is hard for us to have service places for trucks and, therefore, it is natural that trucks requiring minimum service attention will get the call. I have explained your careful manufacturing plans and this has won favor for us. But I urge you to give particular attention to getting trucks to us. We need them—in fact need them more than you do in America. We are trying to get back to normal commercially here and we must have trucks to do it with."

INCREASED CAPITAL FOR EAGLE TRACTOR.

For the purpose of increasing its monthly output of tractors to 60 or 75, the Eagle Manufacturing Co., Appleton, Wis., has increased its capital stock from $200,000 to $500,000.

Large additions to the machine shop and foundry will be erected at once. New officers have been elected as a result of a reorganization due to the acquirement of a major interest by new stockholders. Frank Saiberlich, president and founder of the company, and his brother, Oscar, retire. A. W. Priest is the new president, Charles Hagen is vice president and general manager, August Meyer is second vice president and E. W. Saiberlich continues as secretary and treasurer.

NEW TRUCK SALES FIRM.

The Truck Transport Sales Co., Manhattan, New York City, has been chartered in New York state with $75.000 capitalization by G. W. Hoertel, C. S. Bentley and A. H. Sharkey, 549 West 49th street.

The Frederickson Axle Co. has purchased a property at Benton Harbor, Mich., and installed facilities and is making ready to produce axles on a considerably larger scale than formerly.

Will Truck Freight 2000 Miles Over Gobi Desert

All power truck freight service undertaken in America pales when compared with that to be inaugurated by the Eastern Turkestan Agricultural Colonization Co., which has just bought 30 Wichita trucks, which will be used to freight supplies to its colonies in the vicinity of Kulja, China. Kulja is approximately 2000 miles into the interior and there are no means of communication save by road—and a road that at best can be described as an animal path—which has been used for many years, that crosses the Gobi Desert, which is one of the largest areas of the world that is uninhabited and on which vegetation rarely grows. For hundreds of miles the road is across shifting sandhills, with occasional stations where there are villages of a few houses and perhaps a water well.

The East Turkestan Agricultural Colonization Co. has been in existence for a considerable number of years and has developed land and does trading with the natives in the vicinity of Kulja. It has been the custom several times a year to send a caravan from Tientsin, which is a well known shipping port, across the desert, the caravans consisting of camels carrying packs and attended by men who alternate walk and ride.

The average camel pay load is about 200 pounds and the daily mileage is not in excess of 20, so that about six months is required for the round journey of 4000 miles. On the march from Tientsin to Kulja food, seed, supplies, etc., are carried, and returning various agricultural products are packed. As might be assumed the cost of transportation is very great, despite the cheapness of labor and camels, and the value of anything carried by caravan is much increased when delivered at destination.

This large cost impelled the company to purchase the trucks, which will replace the camels, and these will be used with trailers so that the load capacity of each haulage unit will be six tons. The expectation is to make the round trip in about 30 days, carrying a total of 180 tons. The 30 trucks are intended to equal in freightage a caravan of 4000 camels and 1000 men, which would have a total freight tonnage not exceeding 400 tons. The caravan could possibly make two yearly trips, carrying 800 tons, and the trucks will carry from 2000 to 2200 tons in the 12 monthly trips.

The operating plan is to establish stations at intervals of about 200 miles, where water, fuel, lubricant and facilities for making ordinary repairs will be maintained. The trucks will be driven by Chinese drivers, who will be instructed by G. Bringewatt, who was employed at the Wichita factory, and who is accompanying the machines to China to become superintendent of operations.

Besides the 30 trucks shipped there was equipment for two complete machine shops, including lathes, drill presses, grinders, shapers, forges and all the machine and hand tools required to such service stations as are the vogue in America. One shop will be at Tientsin and the other at Kulja, and between these there will be nine other shops, where whatever attention is necessary can be given. Besides the equipment stated with each truck was shipped three extra sets of tires, or 360 in all, which will be used as wanted and replenished as necessary. The accompanying illustration is that of the train leaving Wichita for Tacoma, Wash., when shipment was made for Tientsin.

The distance to be traversed by the trucks cannot be comprehended without making comparison, but it is equal to starting at New York City and finishing about 100 miles west of Denver, Col., or from New York to Tucson, Ariz. But to drive to either of these places from the metropolis would be comparatively easy, for unlike the Gobi Desert, there are good roads most of the way and water, fuel and supplies may be obtained every few miles. Between Tientsin and Kulja there is not a railroad and for hundreds of miles no indications of civilization can be found.

ADDITIONS FOR PEERLESS PLANT.

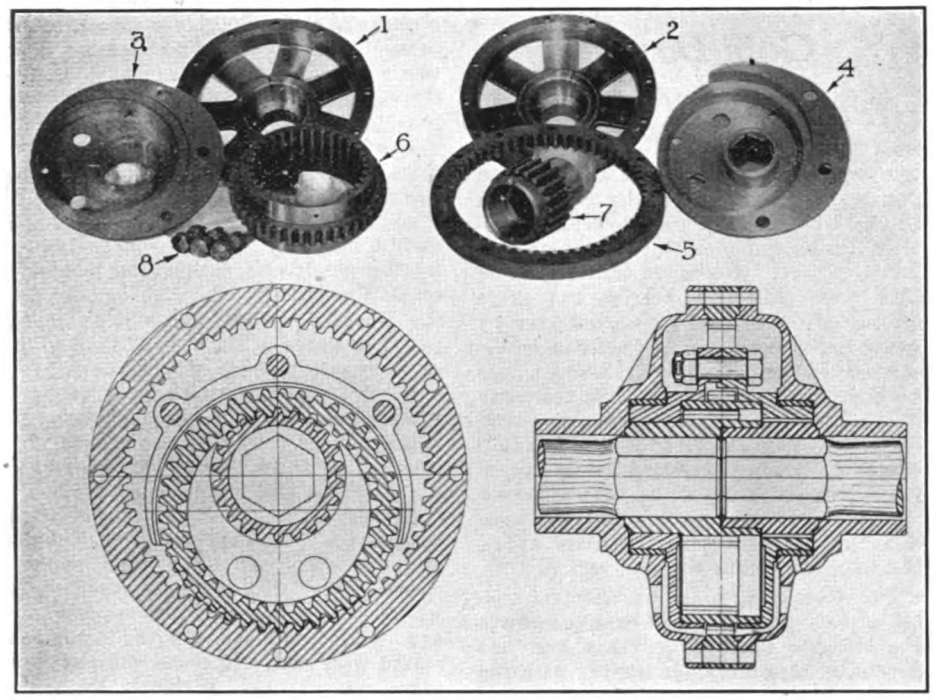
The Peerless Motor Car Co., Cleveland, will build three additions to its factory, at a cost of $150,000.



Train Loaded with 30 Trucks and Equipment for Operating the Terminal and Nine Intermediate Service Stations, Shipped from Wichita Falls, Tex., for Tientsin, China.

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NEW ELBERTZ DIFFERENTIAL



The Elbertz Differential Gearset: Above, a Unit Disassembled After Use for 9000 Miles in a Truck; Below, a Cross Section of the Assembly.

PRACTICALLY all automotive engineers accept without question the need of a differential or compensating gearset in a rear axle, assuming that as in turning one wheel must move faster (or slower) than the other, and that as the driving force must be applied equally to both wheels only with a divided axle shaft can a vehicle be steered

Engineers know that while a conventional gearset will drive well so long as the wheels have traction, in the event one wheel loses traction it is revolved with the full power of the engine and the wheel having contact has no power applied to it, although it may drag or slide from the momentum of the vehicle until the weight causes such friction that traction is again effective.

Differing differential gearsets have been constructed with the object of applying power to the rear wheels, but preventing either wheel turning in reverse should there be loss of traction. These have been of various types and much has been claimed for many of them, but none has been adopted generally as being preferable from an engineering standpoint to the simple construction that has been used for years by power vehicle manufacturers.

A differential gearset for which broad claims for efficiency are made is the Elbertz, which is now being produced commercially by the B. F. Everitt Co., Detroit, the licensee under the patent, and which has licensed several of the largest axle builders of the country to build these gearsets in such numbers as are necessary for their requirements.

Statement is made that the Elbertz gearset has been exhaustively tested by several concerns, builders of axles and trucks, during the last 18 months. The gearset is claimed to be fully compensating and that it will differentiate as will the ordinary type of gearset when turning. When driven straight forward it applies power to each driving wheel in the exact ratio to the tractive effort required; at least to the limit of the combined traction of both driving wheels under all conditions, instead of delivering all the power or torque of the engine to the wheel with the least resistance or traction.

The differential consists of seven main members, which are shown in the accompanying illustration. Of these those indicated as No. 1 and No. 2 are the differential cases, which are respectively left and right; No. 3 and No. 4, which are the crank members; No. 5, which is the internal case gear; No. 6, which is the intermediate gear; No. 7, which is the shaft gear, with three sets of bolts and nuts, which retain the two crank members as one unit when assembled.

The gearset is described as an ingenious arrangement of an epicyclic train of gears, consisting of the internal case gear, which is secured to the differential housing, and which in turn meshes with the intermediate gear member, which can revolve about a bearing on the crank arm or eccentric member. The eccentric member engages with one axle shaft and turns with it, and the other axle shaft engages with the shaft gear which engages with the internal teeth of the intermediate gear member.

The gearset is said to be adapted for all sizes of vehicles and may be constructed for any machine or work. Its practicality is maintained to be undoubtedly established by service. The illustration was made from parts taken from a 3½-ton truck of well known make after it had been driven 9000 miles, which was much of the time considerably overloaded. The photograph was made without retouching and the gearset is as was seen when removed. Showing no evidences of wear.

ORGANIZATION PLANS OF UNION MOTOR TRUCK CO.

Plans for the organization of the Union Motor Truck Co., with a paid-in capital of $500,000, were announced at a luncheon of the Board of Commerce at Bay City, Mich. The company will have $500,000 of eight per cent. cumulative participating preferred stock, par value $100, and 10,000 shares of common stock, without par value.

Present stockholders are given first privilege in purchasing the new stock to the extent of 200 per cent. of present holdings, and of exchanging their preferred and common stock for the new preferred. With each share of preferred stock there will be issued one share of common, and all of the preferred thus unsubscribed will be offered to the public at par.

It is planned to begin the erection of a plant as soon as the stock is sold. The company, it is announced, has made and disposed of about 250 trucks since it began business three years ago, has orders on its books for 30 trucks for immediate delivery and contracts which will occupy the present capacity of the plant for the next three months.

LITHUANIA NOW A MARKET FOR MOTOR TRUCKS.

Lithuania is in the market for motor trucks and passenger cars, and, as America has lifted its embargo on Lithuanian trade, this opens to American manufacturers a practically untouched field.

Railroad equipment, locomotives and rolling stock Lithuania formerly possessed were destroyed during the war. These must be replaced. But even before the railroads are rebuilt the farmers of Lithuania must have automobiles and motor tractors if they are to succeed in rebuilding their country.

The Lithuanians in America have created good feeling toward things American. American manufacturers can immediately get hold of practically all the automobile, motor truck and farm tractor trade. The value of agricultural machinery alone needed in a country where all the work was formerly done by hand will amount to hundreds of millions of dollars. There is seemingly a very potential market for farm tractors, provided that these can be sold on such terms as will be practical, for probably sales will depend upon length of credit given.

Lithuania is also in the market for raw products, including rubber and iron, and for machinery—all for automobile manufacture.

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HILLIARD DRY DISC CLUTCHES

The Hilliard Clutch and Machinery Co., Elmira, N. Y., has recently begun production of a heavy duty clutch of new design for use on trucks and tractors. This firm has been manufacturing friction clutches for trucks, tractors and machinery for the past 12 years, however these clutches have been of the larger sizes only, having ratings of 75 horsepower and over at 1000 revolutions per minute.

The experience gained during the past six years with the design of truck clutches for heavy duty engines has enabled the company to bring out the new design here shown, which is for small engines, to meet the severe demands required for trucks, tractors and gasoline locomotives. These clutches will be known as types X, XU and S.

The clutches types X and XU are of the dry disc type and consist of two driven discs and one central driving disc, besides the presser plate and the flywheel web, which also serve as friction surfaces. The friction discs are compressed by means of three levers, which are connected to a compensator ring, surrounding a sleeve on the clutch shaft. These levers bear against rollers, supported by lugs on the presser ring, and their outer ends fulcrum against set screws in the housing. These set screws are used for the purpose of adjustment.

The special feature of the clutch is the compensator ring, to which the lever arms are attached. This has a tapered surface which fits against a spherical surface on a flange on the shifting collar sleeve. With the use of this compensator ring, if the different set screws should be unequally adjusted, or if there should be unequal wear on the discs, this will not effect the perfect operation of the clutch, as the compensator ring will adjust itself with the taper surface so that the pressure will be uniform over the entire surface of the discs.

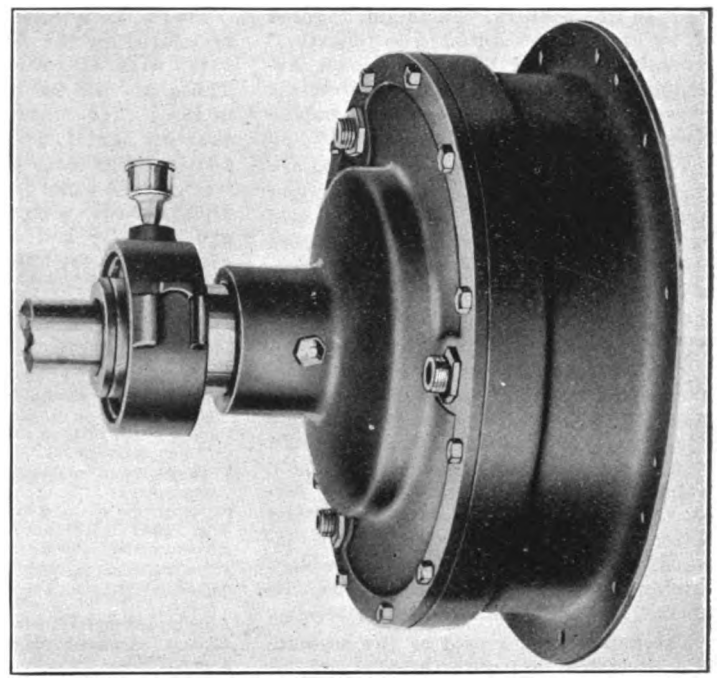
The clutch shaft is provided with a pilot extension, which by means of ball bearings, can be mounted inside the flywheel. The shifter collar on the type "X" clutch is provided with radially extending pins, adapted to engage with a forked lever and the rear end of the collar is flanged outward, and is adapted to make contact with a disc on the clutch shaft, provided with a friction facing, which serves as a clutch brake.

This type of clutch is recommended for 3½ to seven-ton trucks and farm tractors where amidship transmission mounting makes a dust proof type necessary, and is suitfor 30 to 50 horsepower when operating at 1000 revolutions per minute.

The type "XU" clutch is for the same power as the "X," but is designed for unit power plants where the clutch is enclosed by a bell housing.

The type "S-8" clutches are made in several sizes, known as S-4, S-8, S-10 and S-12, and have from four to 12 linings for 50 to 200 horsepower at 1000 revolutions per minute. They have independent housings which are bolted to the flywheel and are suitable for heavy service, as large tracklaying type tractors, gasoline locomotives or heavy truck-trailer work.

The matter of lubrication has been fully cared for, a grease cup being provided for the trunnion bearings, and there is a small oil cup on the shifter sleeve. In order to insure proper lubrication of the pilot ball bearings a small amount of oil is injected through a plugged filler opening in the housing of the clutch.



Complete Assembly of New Type Hilliard Multiple Dry Disc Clutch Designed for Heavy Duty in Tractors and Trucks.

All three types of clutches can also be operated with an oil bath, in which case from one pint to one quart of medium machine oil is poured into the housing. It is claimed that even with oil on the linings these clutches will deliver their rated horsepower so that it is feasible to run them either dry friction or with oil bath.

ENORMOUS LOSS THROUGH NEGLECT OF FARM IMPLEMENTS.

Statement based on the experience of those who have had ample opportunity to judge is that approximately but half the life of farm tools and machinery is realized by the owners. In other words, the cost of the implements is practically doubled by the neglect of owners who could with such care as would prevent rust of metal and deterioration of wood save a very large part of their investment and obtain much better service results. In other words, the average owner buys two implements where he should buy but one, and the practical utility of these is never 100 per cent., simply from neglect.

Announcement is made that the National Association of Truck Sales Managers has elected to membership the J. C. Wilson Co., Detroit, and the Menominee Motor Truck Co., Menominee, Mich., and the Canadian Ford Motor Truck Co.

SEEKING SITE FOR BIG TRACTOR DEMONSTRATION.

A committee of the officers of the Southern California Tractor and Implement Dealers' Association, which has headquarters at Los Angeles, is now seeking a site on which to hold the big demonstration that is planned for September of this year. The committee consists of W. S. Gregory, H. E. Daniels and R. G. Osborne. A tract of land at least a mile square is required for the exhibition, and even greater area could be utilized advantageously. The event will take place as near Los Angeles as is practical.

A new tractor just off the car is never the best one for demonstrations. It is always best to use one for demonstrating purposes that has been driven at least 10 hours. A tractor that has been worked in will deliver 50 to 80 per cent. more power than a brand new one.

HAYES WHEEL CO. TO OCCUPY OLD BUICK PLANT.

The Hayes Wheel Co. has leased the old Buick plant in Jackson, Mich., which was operated during the war by the Jackson Munition Corporation. The Hayes company will use the works for the manufacture of tractor wheels. The plant was used by the Imperial and Mutual Motors for car manufacture after it was abandoned by the Buick. The last car made there was the Marion-Handley.

"THE UNKNOWN INDUSTRY."

"The Unknown Industry" is the title of a folder that has been prepared by and is now distributed by G. A. McGregor, sales manager for the Southern Rock Island Plow Co., Dallas, Tex., which is distinctly readable and is intended to interest and elevate the inventor, manufacturer and distributor of farm implements.

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AUTOMOTIVE INDUSTRY MAGNITUDE

With $1,297,000,000 Invested It Gives Employment to 830,000 Persons and Produces Vehicles Equal in Value to the Capital.

REFLECTING the tremendous growth of the automobile industry in this country, "Facts and Figures of, by and for the Automobile Industry," recently published by the National Automobile Chamber of Commerce, is crowded with information that emphasizes its vast importance.

The American automobile industry employs 830,000 persons, this number equaling half as many as are employed by all of the railroads of the United States, or approximately eight per cent. of all the persons engaged in manufacturing and mechanical industries, whose number totals 10,658,881.

The persons employed by the automobile industry and its dependents would populate Chicago, or the cities of St. Louis and Boston combined. They would populate any one of these states: Iowa, Kansas, Kentucky, Minnesota, New Jersey, North Carolina, Tennessee, Virginia, Wisconsin, California, Georgia or Indiana. They would populate these states combined: Delaware, Idaho, Maine, Nebraska, New Hampshire and New Mexico.

The annual wages paid by the automobile industry amount to $747,000,000, which is more than 2¼ times the gross revenue of the Postoffice Department, and is approximately equal to all of the gold in circulation in the United States.

Enormous Capital Invested.

The amount of capital invested in the automobile industry is $1,297,000,000, which is greater by $250,000,000 than the capitalization of all of the national banks; is greater than the combined outstanding capital stock of the New York Central, Pennsylvania, Chicago & Northwestern and Chicago, Milwaukee & St. Paul railroads; is more than twice as great as the combined outstanding capital stock of the entire Standard Oil group of 35 companies, and is greater than the net ordinary receipts of the United States government.

The capital employed in the manufacture of automobile bodies, parts and accessories is $336,000,000, which is nearly 50 per cent. greater than the outstanding capital stock of all the gas and electric companies listed on the New York Stock Exchange.

The wholesale value of automobiles made in 1917 was $917,470,938, which was about twice the total gross income received by the 12 largest insurance companies.

Of the 550 motor vehicle manufacturers in the United States, 372 make trucks. With an investment of $736,000,000, automobile factories, employing 280,000 persons, are located in 32 states. Wages and salaries paid during the year ended June 30, 1917, amounted to $275.000,000. There are 6789 concerns engaged in the manufacture of some article used in the automobile trade.

There were 5,148,000 motor vehicles registered in the United States Jan. 1, 1918, with 418,000 in New York state. There are 435,000 motor trucks in use in the United States, and these, it is estimated, haul 1,200,000,000 tons of goods yearly. The cost of haulage by motor truck at 18 cents per ton-mile would be $1,080,000,000, whereby the cost of haulage by horse and wagon on basis of 24 cents per ton-mile would be $1,152,600,000.

Other figures given include the following:

The Utility of Power Vehicles.

Number of persons in the United States to one motor car	21
Persons to one car in 11 Middle West states	17
Persons to one car in 11 Eastern states	26
Percentage of cars sold to farmers in 1917 (estimated)	40
Automobiles in United States to each mile of public road	1.72
Automobiles in United States to each mile of surfaced road	14.77
Automobiles in United States for each square mile	1.4
Automobiles in use in all countries outside of the United States, Jan. 1, 1917	719,246
Automobiles in use in Europe, Jan. 1, 1917	437,558
Automobiles in use in Canada, Jan. 1, 1917	118,086
Horses in the United States	24,000,000
Acres of land required to sustain horses	120,000,000
Horses displaced by motor trucks in use (estimated)	2,000,000
Acres of land released by trucks for production of human foods	10,000,000
Horses and mules exported during three years ended June 30, 1917	1,239,959

Value of Power Vehicles to Agriculture.

The value of the automobile to the farmer is indicated by these facts:

"The increase in farm values during the 20 years prior to the end of 1900 averaged $400,000,000 annually. During the same time our population increased, roughly, 50 per cent., or 2½ per cent. per annum.

"The increase in farm values in the 16 years following (these are the latest figures available) averaged $1,300,000,000 a year, over three times as much as in the pre-automobile period. Our population increased during the same period 33 per cent., or two per cent. per annum.

"While the population increased in the 20 years 50 per cent. and farm values 57 per cent., or 3.35 per cent. a year, the population in the 16 years increased only 33 per cent. and the farm values 100 per cent., or 6.25 per cent. a year. The percentage of increase of population fell off 17 per cent., but farm values gained 33 per cent. in the 16-year period.

"Farmers use, at a conservative estimate, 2,000,000 automobiles every day and drive, let us say, a ridiculously low average of 10 miles a day, a total of 20,000,000 miles a day. At 20 miles per hour for 10 miles a day it would represent 100,000 days a day, or 100,000 years a year. If horses were substituted the loss of time would be 300,000 years in each year, multiplied by the number of persons usually carried in the car.

The Enormous Economy of Time.

"If the car were occupied by only one person the loss of production would exceed $250,000,000, which must be multiplied by the number of persons usually carried in the car.

"The automobile is used in the country for the service of the farmer, by doctors, mail carriers, commercial travelers, livery stable owners and telephone companies.

"The disappearance of the automobile would make it necessary to increase the horse population by about 25,000,000. It requires five acres to feed a horse. This would mean that an additional 125,000,000 acres must be used.

"There are now 25,000,000 horses. If these could be disposed of, automobiles substituted and wheat raised on the land now required to feed them, its value would be sufficient to pay the national debt, including the Liberty Bond issues to date."

Truck Manufacturing by States.

Distribution of truck manufacturers by states follows: California, 12; Connecticut, 2; District of Columbia, 1; Georgia, 2; Illinois, 39; Indiana, 9; Iowa, 6; Kansas, 2; Kentucky, 2; Louisiana, 1; Maryland, 1; Massachusetts, 11; Michigan, 48; Minnesota, 8; Missouri, 6; Nebraska, 3; New Hampshire, 1; New Jersey, 7; New York, 31; Ohio, 31; Oklahoma, 3; Pennsylvania, 26; Rhode Island, 1; Texas, 2; Virginia, 1; Washington, 5; West Virginia, 1; Wisconsin, 11; Canada, 8.

The number of truck manufacturing companies in the business, new ones started and companies discontinuing production each year is given as follows:

The Changes in the Industry.

	Total Manufacturers in business	New During Preceding Year	Dropped During Preceding Year
January, 1919	215	43	58
January, 1918	228	54	58
January, 1917	226	67	71
January, 1916	233	73	49
October, 1914	216	25	25
January, 1914	239	63	104
January, 1913	310	108	88
January, 1912	275	140	72
January, 1911	220	131	38
January, 1910	122	47	27

These tables are given:

Brief Statistics of the Industry.

Motor vehicle manufacturers in United States	550
Commercial vehicle manufacturers	372
Passenger vehicle manufacturers	238
States in which factories are located	32
Capital invested	$736,000,000
Workers employed	280 000

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Wages and salaries paid year ended June 30, 1917.....	$275,000,000
Motor vehicles produced in 1917	1,878,878
Passenger cars produced in 1917	1,718,778
Commercial cars produced in 1917	160,100
Wholesale value of vehicles produced in 1917.....	$1,249,390,618
Paid for parts and materials by automobile manufacturers during the year ended June 30, 1917.....	$480,000,000
Average retail price of passenger cars produced in 1917	727
Body, Parts and Accessory Makers.	
Number of concerns manufacturing some article used in the automobile trade..	6,789
Body, parts and accessory makers in U. S.....	1,080
Capital invested by body parts and accessory makers	$336,000,000
Workers employed by body, parts and accessory makers	320,000
Wages and salaries paid during the year ended June 30, 1917, at $900 per man....	$288,000,000
Automobile tires manufactured, fiscal year 1916-7...	18,000,000
Value of tires manufactured, fiscal year 1916-7.....	$450,000,000

Crude Materials in an Automobile.

The average automobile requires:

	Pounds
Carbon steel in bars and billets.....	200
Carbon steel springs.....	113
Carbon steel sheets.....	500
Alloy steel.....	100
Pig iron for gray iron and malleable castings	630
Tin	7.5
Crude rubber.....	20
Copper	36
Lead	5
Antimony	1
Zinc	7
Manganese	10.5

All crude rubber, antimony, tin and 75 per cent. of the manganese are imported.

Approximately 10 per cent. of the carbon and alloy bars and billets, or 30 pounds per car would be melted as scrap.

The average passenger automobile required 1543 pounds of iron and steel in 1917 and 714,708 tons were used for vehicle production in passenger cars alone in 1918.

The Tire Industry Production.

The following shows the rubber tire production in the United States:

Total output	1916	1917	*9 mos., 1918
Casings under six inches...	18,564,957	25,840,656	16,196,196
Tubes under six inches...	16,785,398	23,256,752	16,037,155

*Production limited by agreement with the War Industries Board.

The total gasoline required in 1918 was 63,000,000 barrels and the total available supply was 67,000,000.

Crude Rubber Consumption.

Crude rubber consumption in the United States was as follows:

(In pounds—dry weight.)

Used in	1917	1st 9 mos. 1918
Casings under six inches	162,643,482	106,256,616
Tubes under six inches	35,704,446	24,577,986
Solid tires.....	25,055,673	38,634,236
Other tires and tire sundries	9,983,195	11,105,397
Mechanical goods..	21,857,385	17,138,600
Boots and shoes....	26,823,689	24,316,146
Other products.....	24,045,782	24,481,546
Total.....	306,113,652	246,510,527

What Is Shown by Figures.

Under the caption of "Magnitude of the American Automobile Industry," the following is stated:

"Importance of the automobile industry to the prosperity of the country and of the automobile and motor truck to the daily needs of the American public is shown by the amount of capital invested and the great sums of money kept in active circulation by purchase of materials and payment of wages; the hundreds of thousands of persons dependent entirely upon the industry for a livelihood for themselves and their families, and the increased wealth brought to American workingmen and investors by the exportation of motor vehicles and parts.

"That the American public appreciates the utility of the motor car and considers it a necessity is revealed by the surprising number in use, amounting to more than 5,000,000 at the end of 1917. From two to three times as many automobiles in proportion to population are owned in the Central and Western states as in the manufacturing states of the East, showing that the farmer, who needs transportation most, appreciates the facilities for quick and convenient transportation afforded by the motor car.

"It is significant of the importance of the motor truck to the industry and commerce of the country that in the railroad freight congestion in 1917 the 435,000 trucks in use hauled about 1,200,000,000 tons of materials and merchandise during the year. And in view of the demand for increased production of foods, it is highly important that 10,000,000 acres of land were released by the use of motor trucks instead of horses, which require five acres of land each for their support."

The following census of the automobile industry was compiled by the Bureau of the Census:

The Latest Census Statistics.

Automobile establishments, including body and parts plants:

	1899
Number of establishments....	57
Capital invested.....	$5,769,000
Persons engaged in manufacture	.....
Value of products.....	$4,748,000
Paid for materials.....	$1,804,000
Wages and salaries.....	$1,616,000

Production of the Truck Industry.

The following table shows motor truck production in the United States:

Year	Number	Wholesale Value
1904	411	$946,947
1909	3,255	5,230,023
1903 to 1910	10,374	20,485,500
1911	10,655	22,292,321
1912	22,000	43,000,000
1913	23,500	44,000,000
1914	25,375	45,098,464
1915	74,000	125,800,000
1916	90,000	157,500,000
1917	128,157	220,982,668
1918	227,250	434,168,992

Why the Truck Is an Essential.

The following appears under the heading, "The Motor Truck as an Essential:"

"The motor truck is solely a utility. There can be no doubt as to the value of every possible motor truck in service. The motor truck discharges no function of entertainment. It furnishes transportation at a time when transportation is a vital material need.

"Insufficient transportation did more to retard the rapid and efficient entrance of the United States into the war than could a legion of Huns.

"This was proved when, to get transportation for coal to send ships to Europe with urgently needed supplies, the Fuel Administration found it necessary to stop all production for five days.

"Shortages of coal and steel result from transportation deficiencies.

"There are three main forces of transportation: The railway, the steamboat and the motor truck.

"The enormous growth of business and the extraordinary volume of war haulage overwhelmed both railroad and steamboat facilities.

"The United States government has recognized the importance of the truck, both for military and so-called domestic use. The Highways Transport Committee, serving as part of the National Council of Defense, was organized to divert all possible traffic to the highways.

"Government trucks running from cities in the Middle West to the seacoasts are constantly establishing the practicability of overland delivery by power vehicles.

Value of Truck Haulage to Public.

"The Department of Agriculture has encouraged the application of trucks to the moving of food.

"Every truck put into service brings the manufacturer nearer his market, brings the farmer nearer the consumer.

"The farmer, dependent as much on rapid access to his market as on the productivity of his farm, finds the motor truck coming to his aid at a time when he cannot hire farm hands. A truck on a farm will replace from two to four men. It will carry twice the load in half the time. It will make available for other production five acres of land whose year-

1904	1909	1914
178	743	1,271
$23,084,000	$173,837,000	$407,730,000
13,333	85,359	145,951
$30,034,000	$249,202,000	$632,831,000
$13,151,000	$131,151,000	$356,208,000
$8,416,000	$58,173,000	$139,453,000

ly crop is now required to feed a horse.

"It has been estimated that in view of the greatly increased production of foodstuffs, wheat, rye, barley, oats, corn, beef, pork, mutton, eggs, milk, poultry and fruit, that 2,000,000 trucks could profitably be used between farms and markets. Only 450,000 motor trucks are now available for all lines of business. This is only 22½ per cent. of what could be applied to farms alone."

During the war, automobile factories, in addition to automobiles, furnished the

(Continued on Page 287.)

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NEW TRUCK BODY WEIGHT STANDARDS

RECOMMENDATION that new standards for body weight allowances be adopted has been made by the Truck Standards Committee of the National Automobile Chamber of Commerce. It is suggested that the present tables of standard speed rating and of standard body weight allowances for motor trucks be eliminated and new tables adopted, and also that the present table of standard demonstration charges be abolished.

The proposed standard speed rating table for gross weights, chassis, body and freight load provides for a speed of 25 miles per hour for trucks with pneumatic tires up to 28,000 pounds and for the following speeds where solid rubber tires are used: Up to 4000 pounds, 25 miles; 8000, 20; 12,000, 18; 16,000, 16; 20,000, 15; 24,000, 15; 26,000, 15; 28,000, 15.

"These speed ratings," states the committee, "should be recognized by the manufacturer as the maximum and not exceeded under any conditions. The manufacturer should stamp on the truck caution plate the actual maximum speed with load for which the truck is built and beyond which the truck is not guaranteed."

This table is suggested for standard body weight allowances:

Load tons	Allowances
1—1½	1200
2—2½	1500
3—3½—4	2000
5 and over	2500

"We recommend," the report states, "that no change be made in the note which now accompanies the table on standard body weight allowances."

The committee reports that the table of standard frame, widths and lengths has been referred to the Trucks Standards Committee of the Society of Automotive Engineers for revision. The report continues:

"Standard caution plate for motor trucks. The committee recommends that the present form of plate should be retained, and that the six foot notes should be retained with the exception of the note headed 'speed rating,' which should be revised to read as follows:

"The figures given in the table headed 'Standard Speed Ratings for Motor Trucks' should be recognized by the manufacturer as the maximum and not exceeded under any condition. Manufacturer should stamp on the truck caution plate the actual maximum speed with load for which the truck was built and beyond which the truck is not guaranteed."

"As stated above truck manufacturers should be responsible for six of the weights which are called for on this plate, as follows:

Freight load capacity	Standard	
Body weight allowance	Standard	
Weight of chassis	Standard	Actual
Total weight, chassis body and load	Standard	Actual

"The truck manufacturer, his distributor, dealer, or agent should be made responsible to see that the body is weighed and that the plate is stamped:

Freight load capacity	Actual
Body weight allowance	Actual

"The bulletin issued to chamber members should lay great stress on these last two weights which are now supplied in very few instances.

"As recommended above, the chamber through proper channels, should suggest to the motor truck license bureaus of the various states that it will be possible for them to reduce road wear by insisting that the truck be equipped with a plate stamped with all eight weights and submitted to a representative of the State Motor Vehicle Commissioner before a license is issued."

Under the caption, "Times Have Changed," the report has the following preamble:

"How often we have delayed matters in the past by getting the cart before the horse.

"In place of the horse we now have the motor truck with the cart on its back.

'The danger now lies in a tendency to get the truck before the cart, or, in other words, to sell the truck chassis before the truck body is definitely laid out.

"Keeping in mind the table of standard body weight allowances, and balancing up with the prospective owner's requirements, the truck body is the measure which should be used to determine the type and size of truck chassis that must be purchased.

"This, of course, applies to the retail salesman, and we should make a very determined effort to impress this individual with the importance of selling the truck body and definitely determining its size and probable weight and the weight of the material it will carry before he quotes chassis prices or furnishes chassis specifications.

"For until he has the body specifications nailed down the salesman is not in a position to decide what he should offer in the way of a truck, tractor or trailer chassis. In reaching this decision the salesman should, of course, have in mind the question of delivery and the stock of chassis which he has on hand.

"We can think of many instances where it will be extremely difficult for the salesman to get body specifications in advance, but if we will examine each instance carefully and make an attempt to overcome these difficulties, we will succeed in the end in eliminating many of the diseases which now retard the growth of motor vehicle transportation.

"We have adopted new standards for body weight allowance. If we agree that these amounts are practical, we should take steps to convince retail salesmen and body builders that excess body weight must be deducted from load carrying capacity as explained in our circular on caution plates.

"We recommend that the National Automobile Chamber of Commerce should communicate with the organization of truck sales managers, recently formed, and ask for their co-operation along these lines.

"We are asked by the S. A. E. to determine suitable practise in the use of truck capacity caution plates. We believe that the present plate provides space for all of the information that can be required. We recommend that the National Automobile Chamber of Commerce should issue a bulletin to its members recommending that manufacturers supply the six weights which they are able to furnish at the time the chassis leaves their factory, and that they shall insist that no chassis shall be actually shipped until these six weights have been stamped on the plate.

"We further recommend that the National Automobile Chamber of Commerce through proper channels shall take steps to co-operate with the motor truck license bureaus of the various states, to the extent that no motor truck license shall be issued until the motor vehicle has been inspected by the Motor Vehicle Commissioner or his duly appointed representative, and that inspection shall show that the eight weights called for have all been stamped on the plate."

The recommendations have been submitted by mail to each individual manufacturer for his approval. The Truck Standards Committee is composed of D. C. Fenner (Mack), chairman; Francis Davis (Pierce-Arrow), F. A. Whitten (General Motors), E. M. Sternberg (Sterling) and F. F. Beall (Packard).

MOTOR TRUCK TRANSPORT LINES IN IOWA LAST YEAR.

A report of the Iowa Highways Transport Committee shows that in 1918 there were 61 motor truck transport lines in operation throughout the state, and that they used 187 motor vehicles on regular routes.

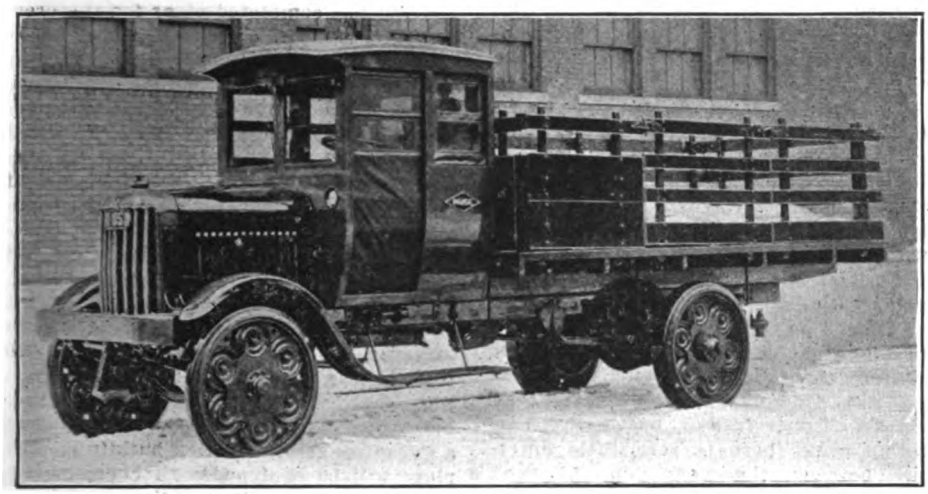
"The total daily tonnage," says J. D. Eggleston, chairman of the committee, "was 57 tons, for which revenue was collected and tax paid, making a total for the year of 172,000 tons, or 8610 car loads, or in other words, 344 train loads. Each of the 187 trucks averaged 70 miles per day, making a daily mileage of 13,090, or 3,927,000 miles of highway for the year.

AUTO WHEEL CO. IS WORKING AT FULL CAPACITY.

Producing 450 sets of car wheels daily, the Auto Wheel Co., Lansing, Mich., is now operating at full capacity. The company is adding more hands and is preparing for months of heavy business with automobile manufacturing concerns. Additional equipment is being installed.

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JAXON FULL-FLOATING TRUCK WHEELS



Paige Truck Equipped with Jaxon Full-Floating Truck Wheels, Showing the General Appearance of the Units.

EXCEPTIONAL tire mileage and great mechanical endurance is claimed for the Jaxon full floating wheels, produced by the wheel division of the Jaxon Steel Products Co., Detroit, Mich.. and statement is made that these are based upon knowledge obtaining from long extended tests and careful observation by engineers. Briefly, the wheels are designed to absorb the stresses of starting, braking and stopping, road shock and vibration of the mechanical construction of the truck chassis, and the term "full floating" is applied because the weight of the chassis, body and load is carried on a series of six solid rubber buffers incorporated in each wheel.

The wheel consists primarily of a steel rim or ring having an internal flange at either edge or side, and seated in this rim is a steel frame which consists of a series of seven wide rings, the six external rings being channeled to have the greatest diameters in the centers. The arrangement of the rings are tangential to each other and the center ring, and these are retained in the outer rim by the flanged edges and by six malleable iron brackets equally spaced on the outer rim and between the rims of the rings, the brackets being formed to have wide bearings on the outer rim, to which they are riveted, and the ring rims. When assembled the structure, as shown in an accompanying illustration, is a substantial frame of the rim, brackets and rings firmly held by contraction of the felloe band or rim.

The width of the rings is nearly that of the rim, and the brackets are so formed that when assembled the greatest diameters of the rings are seated in channels in them, so that there can be no lateral movement of the rings in the brackets or rim. The wheel structure has high structural strength and what may be regarded as minimum weight. The rims are made to conform to standard S. A. E. dimensions and any standard size tire can be mounted on them.

Weight Carried on Six Cushions.

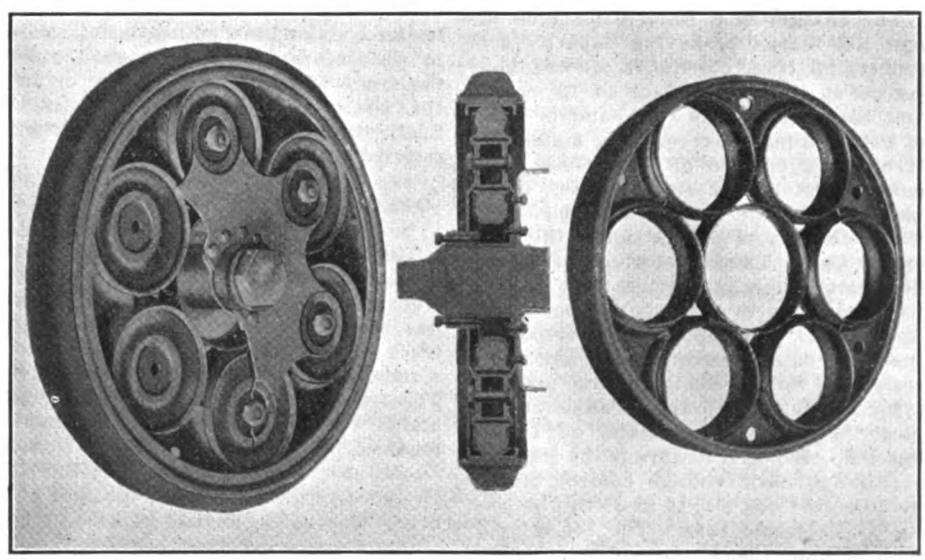
In each of the six outer rings of the wheel frame is placed what is termed a rubber cushion. These consist of a circular cushion hub, a hollow steel casting with a periphery slightly wider than the center, with a large center bore for an assembling bolt. The periphery of the hub is grooved circumferentially, these grooves serving as anchorage for a hard rubber ring that is vulcanized to it, and to which in turn is vulcanized a resilient rubber ring that has somewhat the same form as the conventional rubber tire, but is proportionally deeper in section. The cross section between the side walls of the ring is widest at a point about a third of the dimension between the outer diameter and the hard rubber base, and narrowest at a point about two-thirds of the dimension, so that as the ring is distorted under pressure the yield will be greatest at the narrow section and the rubber will not so stress at the anchorage at the base that it will rupture. The peripheral contour of the cushion is such that it will be seated firmly in the groved ring or rim.

On either side of the wheel frame, so positioned that the center is centered with reference to the central or seventh ring of the frame, is placed a driving plate. This is a heavy steel member with integral arms, the ends of which are formed to fit into the cushion hubs, which are secured by bolts extending through the cushion hubs and tightened. These plates are formed so that the wheel hubs may be bolted to them. The plates are differently formed as to centers for each side of the front and rear wheels, there being inner and outer hub members, and for the insides of rear wheels the inner hubs carry the brake drums. The hub members are designed for different type axles, either semi-floating, three-quarter floating or full floating, each of which requires different location of the bearings and means of securing the wheel to the axle housing or to the axle shaft.

The Assembly of the Units.

The accompanying illustration shows the wheel frame without the cushions, the driving plates and hub; a cross section of a completely assembled rear wheel without the bearings and driving shaft, and a complete wheel with a portion of the driving plate cut away to show the relations of the plate, the cushions and the wheel frame. One will note from the cross section of the rear wheel that as constructed the weight of the chassis and body is carried by the hubs and the driving plates, and the plates in turn are carried by the six cushions. The complete assembly is turned by the driving plates and there is no movement of the cushions in the rings.

As the weight is entirely supported by the cushions and there is no rigid connection between the driving plates and the wheel frame or rim, all stresses are absorbed by the cushions, no matter what the speed or the character of the load. There is no frictional contact, for there is no movement other than that re-



Jaxon Full-Floating Truck Wheels: At Left, Section of Driving Plate Cut Away to Show the Rubber Cushions; Center, Cross Section of Wheel Showing the Manner of Assembly; Left, the Frame of the Wheel Without Cushions, Driving Plates or Hub.

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sulting from the distortion of the rubber cushions and there is a very high degree of resiliency, for the cushions are unchanged, no matter what the mileage driven. All the cushions are bearing a load whenever the vehicle is moving, when starting or stopping, when brakes are used, or when the wheels contact with road obstructions.

Large Claims for Economy.

Statement is made that tests have demonstrated that solid tires on Jaxon full floating wheels afford more than twice the mileage than when mounted on rigid wheels, this resulting of the absorption of vibration and the reduction of slippage of the tires on a road surface. This in turn minimizes the mechanical wear on the chassis construction units. Another claim is that the consumption of fuel is reduced from 15 to 20 per cent., dependent upon the conditions, because there is better traction, and that increased speed is obtainable with the same setting of the throttle. Not only this, there is less tendency of Jaxon wheels to skid because of the greater resiliency and the lessened degree of shock.

The manufacturer claims that no parts of the wheel can break, wear, rattle or require more attention than a solid wheel. The wheels can be adapted for any type of drive, worm, chain, internal gear, double reduction or bevel gear, and in any size required. Briefly, the wheels are claimed to afford greater tire mileage, fewer repairs, substantial fuel economy, faster speed, lessened skidding, increased revenue from earnings and prolonged service life of the machines.

HB 16-BATTERY CAPACITY CHARGING OUTFIT.

The HB 16-battery charging set is a new set, adopted for an average size garage, where demands for battery charging necessitate larger capacity equipment than is practical with smaller sizes. The general use of batteries in all types of cars and the need of occasional charging is largely responsible for this set.

The charger is a reliable machine of one KW capacity, having capacity for recharging from one to 16 six-volt batteries, or their equivalent in 12 or 24-volt batteries, at one time, and is built of extra strong, wear-resisting materials. It operates on two or three-phase city current, but not on single phase. Most garages have the current available, and, if not, the city plant can supply the necessary lines. There are two separate, independent charging panels, with capacity to carry up to eight six-volt batteries. Each panel is complete with ammeter, fuses, cutouts, rheostats, etc., and with resistance for balancing the line and varying the rate of charge. Panels are of clear black electrical slate, oiled and beveled. A special feature is the HB universal automatic voltage control, which permits charging six, 12 or 24-volt batteries at the same time. The set is sold with a money-back guarantee of satisfaction with privilege of return within 10 days. It is manufactured by Hobart Bros. Co., Troy, O.

TRUCKS AND TRAILERS REDUCE TRANSPORT COST.

Charles Kurz of Kurz-Downey Co., Chicago, one of the largest box making concerns in the Middle West, tells of the record made by two tractors and three trailers, which have reduced his transportation cost 100 per cent. and enabled his firm to do what had been impossible with teams—deliver from 30 to 60 tons of boxes a day to Sears-Roebuck alone and many additional tons to other customers.

One trailer is loaded at one end of the route while another is being unloaded, and in this way the two tractors are kept continually at work. The tractors are of different capacities, one being a Federal light duty tractor and the other the Federal heavy duty tractor, but in this particular work there is very little difference between the work done by each tractor, the trailers all being of the same capacity. The loads average six tons a trip, although they have gone considerably higher than that on occasions.

The trailers are 20 feet long, seven feet wide and eight feet high, and were originally designed to carry made up boxes. Owing to the limited storage space at the Sears-Roebuck plant, in spite of its 40 acres and hundreds of buildings, the boxes are delivered "knock-down," yet the same volume, entailing a far greater weight, is carried by the tractors and trailers. They make five trips each work day over six-mile hauls, each tractor hauling about 30 tons a day to either Sears-Roebuck or some other firm.

Figures supplied by Mr. Kurz show that with teams haulage of 60 tons a day cost $40, while at present, even with advanced costs of haulage, this is being done by tractor with a cost of from $17 to $20 a day. Mr. Kurz also says that the tractors have done everything a team can do—and more. One of the recent "stunts" was "pulled off" by the light tractor which was used to respond to a hurry-up call from the Sears-Roebuck company for saw dust.

The tractor was attached to the trailer and run into the yard beside the saw dust pile. a tarpaulin was placed in the trailer body and loaded nearly full. Holes in the soft ground in the yard pulled the front wheels of the tractor up into the air several times, but the tractor finally triumphed and made the trip in record time.

ORLOFF TRUCK A NEW PRODUCT.

The Leonard B. Orloff Co., 811 Second avenue, Detroit, distributor for Standard trucks, has removed to a large plant and has begun the production of a one-ton truck chassis that will be assembled from standard parts produced by specialists. The truck will be known as the Orloff and it will be constructed of Continental engines, Detroit pressed steel frames, Detroit Steel Products springs, Timken-Detroit front axles, Russel internal gear drive rear axles, Detroit Gear and Machine transmission gearsets, and clutches, Long radiators, Gemmer steering gears, Hayes wheels and Motor Metal Products fenders.

BIG SEAMLESS STEEL TUBE PLANT.

The Detroit Seamless Steel Tube Co., Detroit, has completed plans for the erection of a big plant that will cost $3,000,000, to be erected on a 60-acre tract in Warren avenue, and when the first unit, which will cost $1,000,000, shall be completed Jan. 1 the works will be moved from the property at West Jefferson avenue and 19th street, which has been sold to the Pennsylvania railroad. The company has increased its capital from $300,000 to $2,000,000, which is equally divided into preferred and common stock.

The buildings will be concrete, brick and steel, with tile roof, and the main structure will cover an area 350 by 550 feet, having three bays for manufacturing, each 90 by 550 feet, and 20 feet height, with a separate heating plant and a two-story administration building. The plant will be equipped with every necessary practical facility for time and labor saving. Powdered coal will be used for heating and annealing, this method insuring complete combustibility and full heat production.

The welfare of the employees will be provided for by social and recreation rooms in the administration building, shower baths in the plant, and a fully equipped hospital. The first unit will have a capacity of 2500 tons of tube a month from half-inch to six inches diameter. This material is used for power vehicles of all kinds, farm tractors, locomotives and stationary engines. Raw materials can be delivered and finished products shipped by a spur track through the plant. This concern is the only seamless steel tube manufacturer in Michigan.

HALF THE TRUCKS WILL BE SOLD TO FARMERS.

W. L. Kissel, secretary and treasurer of the Kissel Motor Car Co., Hartford, Wis., says that it is estimated that 50 per cent. of this year's production of motor trucks will be purchased by farmers. "Of the motor trucks produced in 1918," he declares, "the farmers bought 34 per cent., while 27 per cent. were shipped. This left only 39 per cent. for commercial use. Thus it can be seen that with the record amount of building, manufacturing and acreage planting now under way, and which will increase during the next two years at least, the demand for motor trucks may soon reach that point where deliveries are as hard to get as passenger cars are now."

KALAMAZOO MOTORS TO DOUBLE CAPACITY OF PLANT.

The Kalamazoo Motors Corporation, Kalamazoo, Mich., has awarded to O. F. Miller the contract for the erection of a machine shop, one story high and covering 2000 square feet of floor space. Additional equipment has been purchased for this department. A covered loading and unloading platform is also included. Plans are also provided for a building for the stock room. These changes will double the capacity of the present plant and permit the assembling of from 125 to 150 trucks a month.

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KOEHLER MODEL M 2½-TON TRUCK

PRODUCTION of a new truck chassis that is known as model M, which will succeed the model L of the Koehler series, has been begun by the H. J. Koehler Motors Corporation, Newark, N. J., and this will be built in considerable numbers. The corporation is now considering establishing a new factory to meet the demand for machines already realized, which is expected to considerably increase.

The Koehler series now includes the model L, 1½ tons load capacity, an internal gear driven type; model KT, a road tractor having three tons load capacity with a semi-trailer; model M, 2½ tons load rating, and model MT, a road tractor rated at five tons capacity. These units are sold for $1450, $1535, $2965 and $3050 respectively f. o. b. Newark. The model M is the first worm driven machine built by the Koehler corporation and with the knowledge of truck requirements from 10 years' truck manufacturing experience unusual care was taken in developing the design. There was realization that the truck buyer does not care to accept what he may regard as experimental, but will approve whatever has been proven by service.

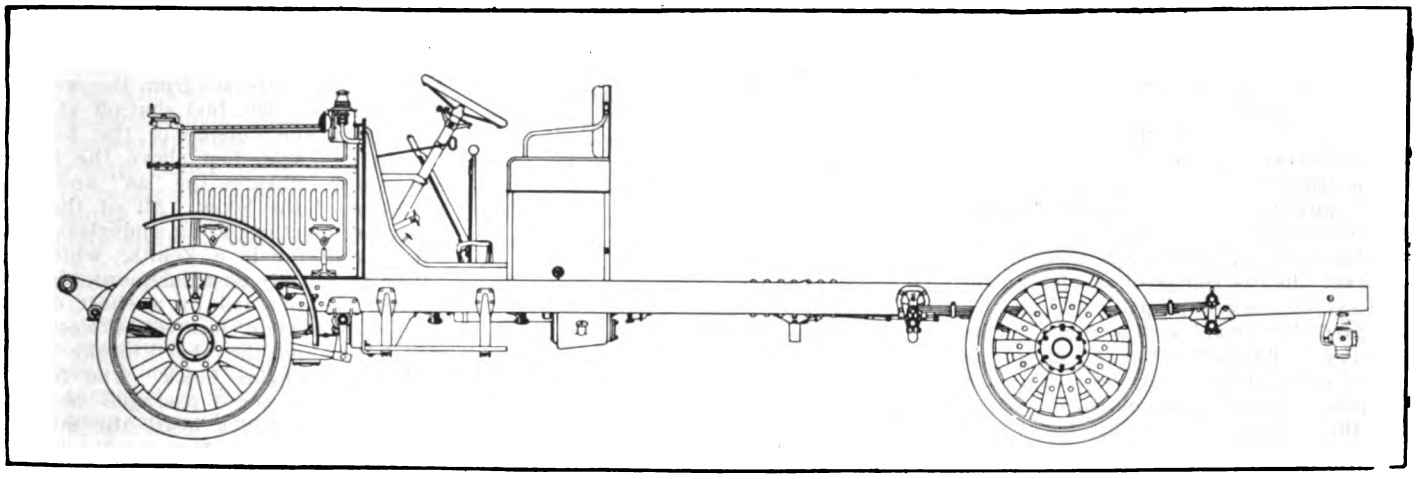
In other words, the machine that is built of units that are known generally as the products of specialists, and which have been developed by sound engineering to meet the requirements of service, has a face value that is understood by business men, and what is now regarded as having equal importance is the assembling of these units into a well balanced chassis. Recognition of these two facts by the designer, Carl D. Peterson, is evident.

Claim Eight Years Service Life.

The chassis has been built with an unusual margin of safety for each unit, and great care has been taken to obtain such relation of units and parts that the entire construction is extremely well balanced. The assembly details have been developed with much care that there shall be uniform strength throughout. The proportions of the several units and the fittings have been arrived at with the view of obtaining exceptional endurance, and statement is made by the company that with normal care the period of service life should be approximately eight years, or 60 per cent. more than is claimed for the average truck chassis by manufacturers.

As the chassis is not heavy for the load rating the strength that affords endurance is obtained by quality of materials and the care given to assembling. All parts having moving contact are very large to minimize wear, wherever practical surfaces subject to friction are hardened, and generally the metals differ. The engine is lubricated by what is claimed to be a very efficient system, but aside from the power plant, transmission gearset and rear axle, the units are lubricated by wicks supplied from reservoirs of oil so far as this method could be utilized. The grease cups and cup oilers have been reduced to a surprisingly small number.

Statement is made that the reservoirs are either in the castings or forgings, or in tubular members, so located that there shall be adequate flow of lubricant through the wicks, and that in some cases these supplies will be sufficient for months. In no instance should there be excessive wear because of the lack of lubricant, and if replenishments be made at reasonable intervals the chassis will be extremely well protected. Claim is made that as the flow of oil is always outward from the centers of the bearings dust or abrasive material cannot accumulate in them, and external cleaning will ordinarily be sufficient, with regular renewals of oil, to insure against wear.



Drawing of the Side View of the Koehler Model M 2½-Ton Truck Chassis, Showing the Flat Springs and the Practically Straight Shaft and Heavy Construction of Units.

High Grade Construction Units.

The chassis units include a Hercules engine, built to a Koehler design, a special radiator built to Koehler design, Zenith carburetor, Eisemann magneto, Simplex governor, Brown-Lipe dry disc clutch, Brown-Lipe transmission gearset, Spicer universal joints and driving shaft, Timken worm drive rear axle, Mather springs, Parish & Bingham frame, Lavine steering gear and Wayne wheels. In the general assembly simplification and accessibility have been sought and realized to an unusual degree.

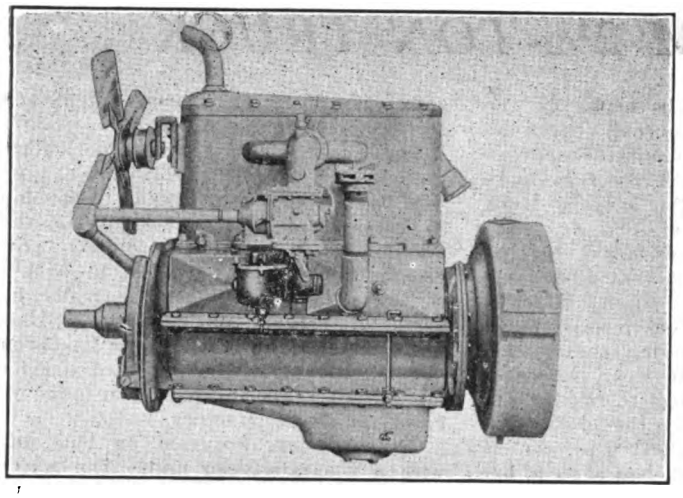
The engine is a four-cylinder, four-cycle, water cooled, L head, vertical type that is claimed by the maker to develop 35 horsepower at 1200 revolutions, the maximum to which it is ordinarily governed, which is considerably in excess of the power that would normally be used for hauling full freights. Statement is made that this engine has been very thoroughly tested in hard service for several years and has been found to be extremely satisfactory.

The cylinders are cast en bloc and with a separate head unit. The water jacket is integral with the casting and the chambers extend the full length of the cylinders instead of to the bases of the expansion chambers, this being practically double the usual radiating surface of engine cylinders. This form of jacketing is claimed to make for both lubricating and cooling efficiency. As cast the water chambers can be completely cleared, insuring freedom of circulation, and the walls of the jacket and the cylinders made uniform thickness, which insures a high degree of cooling and lubricating efficiency. The valves are at the right side and wide webs under the pockets serve as seats for the pressed steel covers of the valve mechanism. The head unit is cast with large water jacket chambers surrounding the valves and the spark plug bores, and increases in depth from the rear to the front, where the outlet rises sharply. The head is secured by a series of cap screws.

Engine Made in Five Sections.

The engine as assembled consists of five horizontal sections—the head, the cylinder block, the upper and lower section of the crankcase and the oil reservoir. The upper section of the crankcase has three central vertical transverse webs that carry the three center main bearings of the crankshaft and there are forward and rear extensions, the former, with a cover plate, housing the timing gearset, and the latter having a heavy flange to which the bell housing of the flywheel is bolted. At the

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Intake Side of the Koehler-Hercules Engine, the Upper Crankcase Section Being Covered with Plates to Afford Access to the Five Main and Connecting Rod Bearings.

left side are two rectangular openings practically the length of the unit, which are covered with plates retained by studs. By removing these plates the main and crankpin bearings of the connecting rods are exposed for examination or adjustment.

The lower section of the crankcase is the base of the crank chamber. This has wide flanges at top and bottom, and there is a transverse horizontal web that serves as the top of the oil reservoir. The oil reservoir section increases in depth from front to center and then is practically uniform, this affording drainage of the lubricant in the rear half, at the forward end of which is located the oil well. In the center of the bottom of the reservoir is a large plate that may be removed for cleaning the reservoir by flushing. Through this opening the screen of the oil well may be reached for cleaning. The cylinder block is secured by the upper section by heavy cap screws and the crankcase sections and the oil reservoir are assembled by through bolts.

Castings of High Grade Metal.

The sections of the engine are cast from a high grade of gray iron and the pistons are of the same material. The flanges are wide and heavy and the machining is very accurately done. The cylinder block is very carefully tested to insure against defects and much care is taken to obtain accuracy of fitting. The rear support arms for the unit are cast integral with the flywheel bell housing, and the forward support is a large trunnion formed integral with the housing.

The crankshaft is a five-journal type, drop forged from a chrome nickel steel, with the front and rear journals the longest, and with the flywheel flange integral. As the cheeks of the crankpins are at 90-degree angles to the axis of the shaft the shaft, despite the five journals, is not unusually long, and the construction is such that it has exceptional rigidity. The shaft is heat treated and carefully ground to dimensions. The camshaft is a three-journal type with large bearings and this is drop forged from high grade steel with the cams and the timing gear flange integral. The shaft is case hardened and ground to obtain exact contour of cams.

The timing gearset gears have wide faces, are large diameter and are helical cut to insure noiseless operation. The gears are completely housed and are very easily accessible by removing the radiator and the cover plate from the housing. The valve mechanism is the conventional poppet type, the valves and tappets being fitted in long renewable guides. The tappet guides are retained in pairs by crowfoot clamps and are quickly and easily removable. The valves are completely enclosed by large cover plates retained by studs and nuts.

Bearings of Large Size.

The crankshaft is mounted in bearings of Fahrig metal in large bronze cages, and the crankpin bearings are a similar type. Both of these are adjustable with shims. The wristpin bushings in the pistons are Non-Gram metal. The construction of the engine is such that the pistons can be taken out through the tops of the cylinder block when such removal is necessary without removing the block from the chassis. The pistons are unusually long and are fitted with a special type of hammered rings.

The engine is lubricated by a system that is maintained to be very efficient. The oil is drawn from a large screened well in the reservoir by a special type of gear pump located at the forward end of the lower crankcase section, the pump having a large cover that when removed fully exposes the gears. This pump is very accessible by simply removing the cover. The oil is forced through leads from the pump to all the crankshaft and camshaft bearings direct, and from the crankshaft bearings through channels drilled in the cheeks to the crankpins, and from the crankpin bearings through tube to the wristpins.

A lead direct to the timing gearset insures this being flooded. The oil pressure is high and the excess forced from the main, crankpin and wristpin bearings is distributed in fine spray to the piston and cylinder walls, the cams and valve tappets, while sufficient oil is carried into the pockets enclosing the valves to fully lubricate them. The oil reservoir has a capacity of six quarts. On the left side of the engine is placed a lever for operating the petcock indicating the maximum level of the oil, and the use of this obviates the need of steeping when testing the reservoir for volume of lubricant.

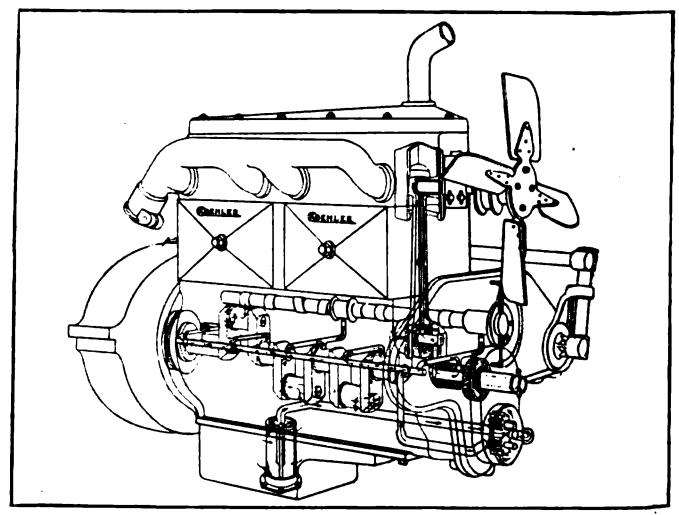
Force Water Circulation.

The engine is cooled by water circulated through the jackets of the cylinders by a centrifugal pump, and a large radiator of the built-up type, having cast top and bottom tanks and a copper cooling section of unusual proportions, mounted with cast side columns. The radiator is mounted so as to be protected against damage from chassis distortion. It can be quickly removed and disassembled and assembled should repair be necessary. Radiation is promoted by an 18-inch, four-bladed fan that is supported by a large roller bearing mounted on an adjustable bracket on the forward end of the cylinder block, and driven by a two-inch fabric bolt from a pulley on the forward extension of the camshaft.

The source of ignition current is a high-tension Eisemann magneto, and the fuel is supplied from a 20-gallon tank, tinned inside and out, and mounted on saddles on frame cross members to protect it against stresses from the weaving of the frame. The fuel shut-off valve is located on the outside of the base of the driver's seat, just above the frame, and a dial indicates the "on" and "off" positions of the lever. All of the fuel and oil connections are a solderless type. The carburetor is a Zenith, which requires practically no adjustment, and the engine is governed by a shaft driven Simplex governor, located between the carburetor and the short intake manifold of the engine block. The fuel is taken through cored passages between the cylinders, which heats the mixture to the temperature of the cooling liquid and insures very satisfactory combustion.

Power Transmission System.

The Brown-Lipe multiple disc clutch consists primarily of 10 large plates, faced with anti-friction fabric, which is maintained to be very easy of engage-



Sketch Showing the Lubricating System of the Koehler-Hercules Engine, the Oil Being Forced from the Reservoir by a Gear Pump.

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ment, positive in action, and as lubrication is unnecessary aside from the shifting mechanism, it requires very little attention. The Brown-Lipe transmission gearset is a selective sliding gear type that is located amidships, having four forward speed ratios and reverse, with direct drive on the fourth or highest ratio. The unit is carried on two pressed steel frame cross members and is supported at three points. There is a breather, and an unusual feature is a filler located on the side by which the lubricant may be quickly replenished.

The gear ratios are fourth, 1:1; third, 1.5:1; second, 2.62:1; first, 4:1; reverse, 4.81:1. The final gear ratio is 9.25:1. The transmission gearset case is designed for the installation of a power take-off for a hydraulic hoist, winch, pump, etc., and it is adapted for driving a speedometer from the shaft. The construction of the gearset is to Brown-Lipe standard, it having heavy shafts and gears of large diameter with wide faces, being equipped with substantial bearings. The shaft from the clutch to the gearset is fitted with two flexible connections which are designed to have movement of five degrees in either direction, this absorbing stresses that might result from starting and braking. The drive from the gearset to the Timken rear axle is through a large steel tubular shaft with three Spicer universal joints, the rear end of the forward section being carried in a deep cross frame member in an SKF self-aligning bearing. This insures a practically straight line drive.

Rear Axle the Latest Type.

The rear axle is a full-floating type with a construction feature that was designed for Liberty trucks, the worm gear being anchored to the differential spider by splines, and retained between the differential flanges by heavy rivets. The axle is fitted with Timken roller bearings and these are adjustable for wear. The brake equipment is ample, the design being the Duplex expanding type, operating within brake drums 18 inches diameter. The brake shoes are faced with Thermoid. The front axle is a Timkén unit, a steel I section drop forging, with heavy knuckles and the wheel spindles fitted with Timken roller bearings.

The wheelbase is 162 inches and the tread 56 inches forward and 57½ inches rear. The wheels are built with the felloes in two sections, the wedge-shaped ends being forced into the metal connectors under high pressure. All the rear wheel spokes are wedged into metal sockets, which distribute the spoke pressure over a very large area of the felloes. The construction is claimed to have weather proof joints and as the spokes are not affected by moisture there is remote probability of wheel shrinkage. There are 12 two-inch square spokes in the front wheels and 12 2½-inch square spokes in the rear wheels. The tires are the solid pressed on type, 36 by four inches forward and 36 by seven inches rear.

The frame is pressed steel, quarter-inch material, 6 1/16 inches depth, with webs ranging from two inches to 3⅝ inches, and constructed so the forward end is rigid and the rear end flexible. It is necked to afford short turning radius. The width is 34 inches and the space back of the driver's seat is 144 inches. All the tubular and channel section frame cross members are large and special jigs and dies are used in the production of the fittings and the assembly of the frames. The frame is suspended on semi-elliptic springs of nearly flat contour of chrome vanadium steel. The forward set is 40 inches length and 2½ inches width, with 10 leaves, and the rear set is 56 inches long and three inches width, with 12 leaves. All spring eyes are fitted with carefully reamed bushings and the spring eye and shackle pins are secured with pinch bolts. The pressure blocks are an arched type and the spring clips are heat treated nickel steel, retained by lock washers and nuts of exceptional length.

The steering gear is an irreversible split nut design located at the left side and it has a 20-inch steering wheel. The control is by foot pedals for the clutch and service brake, a throttle lever on the steering wheel and a foot accelerator, and hand gear shifting and emergency brake levers in the center of the footboard. The drag link connections are the spring tensioned ball and socket type fitted with 1½-inch diameter balls.

Special Construction Features.

There are numerous features of construction that are of special interest. The rear spring front hangers are reinforced by a tubular cross member and the spring eye pins do not project beyond the hangers. They are free of projecting oiling devices, being lubricated by wick fed oil. Accessibility of parts is noticeable. The oil reservoir, the engine case hand hole plates, the timing gearset cover, the oil pump cover are all adapted for quick removal. All bushings subjected to heavy stresses that would destroy bronze are special metal of great resistivity. As the drive is the Hotchkiss system the front anchorage of the rear springs is unusually heavy.

The front bumper is mounted on brackets integral with the frame. The radiator is protected with a detachable curtain for use in cold weather and the radiator, which has a frontal area of 515 square inches, has a total cooling area of 25.750 square inches. The filler cap of the radiator has a very large opening and it is fitted with a cork gasket pivoted at its center on a hinged arc, tension being provided by a coiled spring, so that the opening is effectually sealed and will not rattle and at the same time the cap is easily operated.

The hood ledges are metal and the hood is heavy, with three electrically welded hinges and large louvres. The hood may be locked when raised, insuring against possible injury of the one inspecting or working on the engine. The hood catches are of exceptional size. The dash and the gusset braces are integral and are electrically welded. The driver's seat is similarly constructed, and is anchored by four bolts. The dash and seat are adapted for the installation of fore doors. The seat cushion is 46 inches wide and 18 inches deep and the springs are covered with waterproof material over a thickness of heavy felt. There is 26 inches of leg room between the seat and the dash. The floor and toe boards are retained by wing nuts and these are constructed with maple strips extending across between the frame members. The running boards are carried by heavy hangers, and the fenders are of unusually thick stock. The hangers are secured to the frame by large steel bolts.

Prevention of Rattle and Squeaks.

With the object of preventing rattle or squeaks the brake and clutch assemblies, brake rods, starting crank, hood, etc., are equipped with devices for automatically compensating wear, and packing that will prevent contact of metals is installed under the dash, radiator, hood, seat, etc. The oil dash and tail lamps are well anchored and the warning signal, sounded by the exhaust, is operated by a rod that extends through the dash to the steering column and has a large hand grip, conveniently located for the driver. There is a heavy kick switch on the dash. Provision has been made for the installation of electrical equipment if this is desired, and an odometer may be installed on the right or left front wheel hub. Ample clearance is afforded between the front of the dash and the engine and between the front fenders and the engine.

The accessibility of the different parts is noteworthy. The water pump can be detached by taking out three cap screws, the bracket supporting the steering gear under the frame is so capped that the entire assembly may be removed without dismantling the engine or other units. The clutch can be taken out by removing the cap screws that secure the housing to the engine crankcase and disconnecting the flexible joints of the shaft. By taking off two nuts the brake and clutch pedal assembly can be removed. With two joints disconnected and four bolts removed the transmission gearset may be taken from the chassis. The driving shaft can be lifted with its center bearing by disconnecting the two universal joints.

MOTOR SERVICE FROM BUFFALO TO ROCHESTER.

With the idea of relieving congestion on trains and trolleys a passenger service has been inaugurated by the Erie Service Co., Buffalo, N. Y., and is meeting with so much success that it will very likely become a permanent institution. This company is now operating motor trucks, according to a regular schedule, between Buffalo, Tonawanda, Niagara Falls, Batavia and Rochester.

The Charles B. Bohn Foundry Co., Detroit, is seeking a location outside of that city, where it may erect a plant that will employ about 500 workers.

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SALESROOM AND SERVICE STATION

A Fire-Proof Four-Story and Basement Structure Equipped with Every Facility for Display, Storage and Restoration and Repair.

THE accompanying drawings illustrate a building that would be suitable for the combination of a sales room and service station. The layout presented is four stories with basement, although a plan for a basement is not shown, owing to the limitation of space and also the fact that no difficulty should present itself in providing for this.

The structure is designed to have 100 feet frontage and 90 feet depth and to be located on a street with a court or drive at the right side to afford egress and ingress of machines.

The basement could be used for storage of a general nature, receiving and shipping room, storage of parts, oils, greases, etc.; a large boiler room and the other units that logically should be located in that part of the structure.

On the street floor, flanking the entire front of the building, is a show and sales room, which has two separate entrances, one on either side of the large central window.

In conjunction with the sales room there is an office for the sales manager, located at the rear of the show room. A toilet for members of the sales organization has also been provided.

There is a passenger elevator running from the basement to the top floor, a stairway from the basement to the top floor, and also a stairway from the show room to the second floor.

At the rear is a general garage section, with an entrance from the court or side street. There is an elevator for hoisting cars to all floors, and alongside of the elevator there extends a stairway from the basement to the room. A wash stand will be found on this floor.

The second floor is devoted partly to the main office, which is located at the front end, directly above the show room. There is a women's toilet in connection with the office. This toilet leads from the waiting room at the head of the stairs. The passenger elevator opens into the waiting room as shown.

Provision has been made for a large stock room, where parts and accessories may be kept on hand at all times, so that the needs of customers for repairs and renewals of equipment may be met as they are developed.

There is a storage space for new cars awaiting owners' call, and adequate area can also be provided for used cars that are for sale. This affords in reality a sub-show room and yet has the utility of a storage department for cars. A large toilet is also in this section. This is lighted and ventilated from a court or light shaft.

The third floor is generally given over to repair work. Here is located the general repair department, where all kinds of work may be done. There is an engine repair section, where engines may be overhauled and tuned up.

An electrical department is also illustrated, where batteries, magnetos, etc., may be rebuilt or repaired.

At the rear of this floor are three units that form the heart of the service departments. These are the machine shop, the forging department and the welding section.

A tool room has been shown in connection with the machine shop. By having a system of record of the issuance of all of the tools and that will necessitate their return to the tool room when the workmen are through with them, excessive losses of tools can be avoided. A toilet and a wash stand are shown.

The entire fourth floor is turned over to the finishing department. This floor has a wood working section, a trim department, where all kinds of leather work is done; a general paint shop, two varnish rooms and one enamel room.

The general paint shop occupies the larger portion of the floor. Immediately at the rear of this floor are located the varnish and enamel rooms.

The construction is of reinforced concrete throughout, with brick, granite or artificial stone. The same treatment as that of the trimmings for the first story is to be used for the manufacture of the cornice and inserts in same.

Electric lamps have been placed on either side of the entrance doors, adding much to the appearance and greatly conveniencing ingress and egress at night. A large sign has been incorporated into the design, something just a little different from most signs.

Instead of the unsightly, common place steel frame, an endeavor has been made to weave in a little refinement, and, therefore, the ornamental iron frame work shown. Exceptional individuality may be attained in this respect, and it is believed greater consideration should be given such projects. The cost is a little more, but is well worth it.

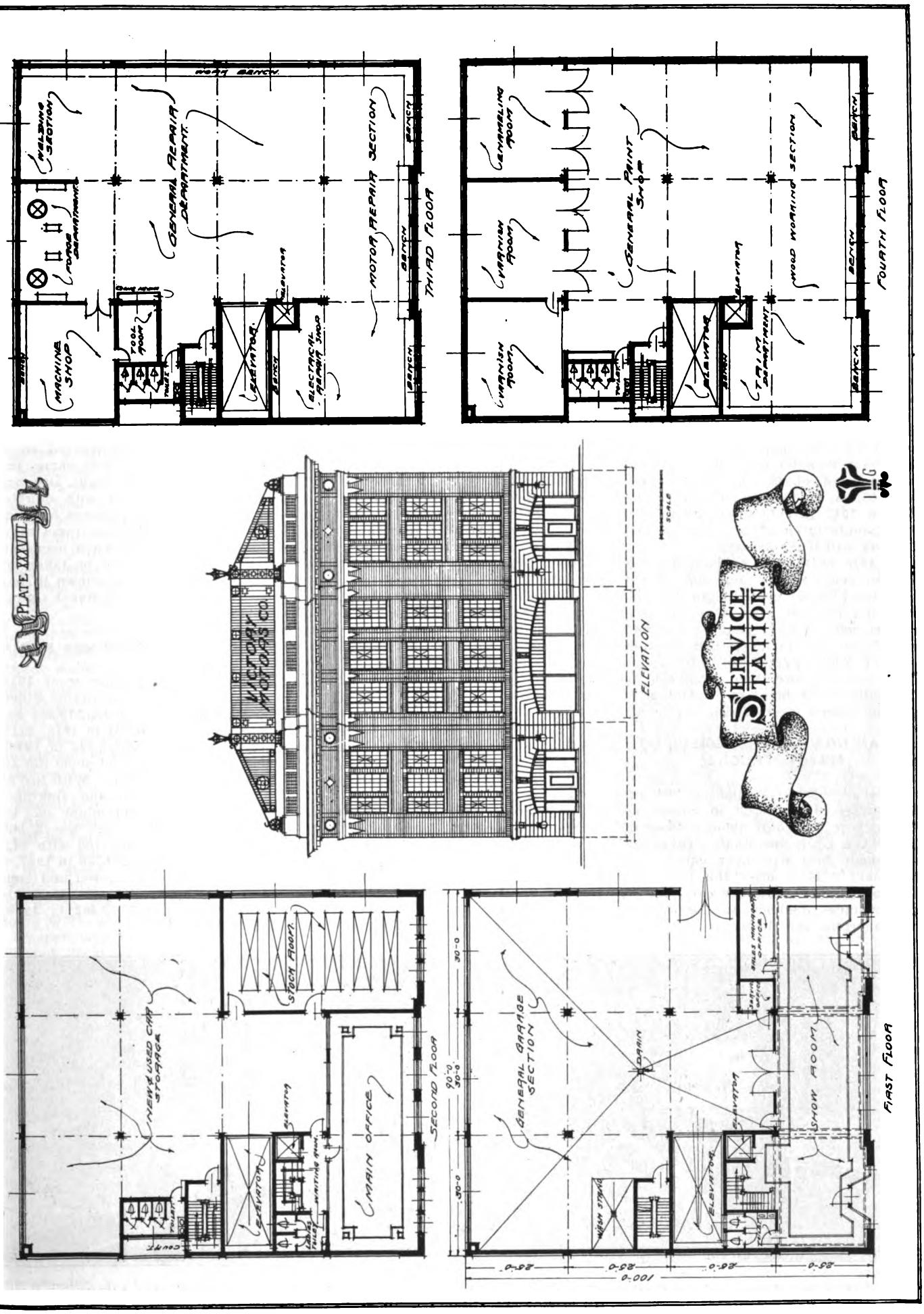
The building is fireproof. Steel sash, wire glass, metal doors, etc., are used throughout, complying with the fire prevention laws.

The cost of such a structure would be from $60,000 to $75,000.

Any further information relative to this plan will be supplied on application to the Architectural Department of this publication.

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PLATE XXXVIII



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OF TRUCK PRODUCTION 40 PER CENT. WILL BE ONE TON RATING.

"In statistics compiled for the 1919 truck production in America the total estimated to be manufactured is 350,000, and of this total the volume will be for the one-ton truck," says G. D. Wilcox, director of sales and advertising for the Commerce Motor Car Co., Detroit.

"The country will absorb over 138,700 one-ton trucks in 1919, or 40 per cent. of the estimated production. The next largest number to be produced will be of the two-ton capacity of which close to 50,000 will be manufactured, or 15 per cent. of the estimated total. The figures are interesting. Taking the various capacity ranges we find that 9300 trucks of one-half ton capacity are to be built: 30 040 of three-quarter ton: 43,300 of 1½ ton: 10,060 of 2½ ton: 6155 of three ton: 19.210 of 3½ ton: 1150 of four ton; 16,992 of five ton; 1000 of 5½ ton; 1070 of six ton and 950 of seven ton.

"In 1912 the truck production was estimated at 50,000 commercial vehicles and 34,701 were manufactured; in 1913 there were manufactured 59,672; in 1914 manufactured 44,043; in 1915 manufactured 65,288; in 1916 manufactured 101,061; in 1917 manufactured 128,157; in 1918 manufactured 227,250, and in 1919 the peak will touch 350,000.

"In 1918 of the trucks manufactured 47.9 per cent. were of one ton or less capacity; 37.6 per cent. 1½ to 2½ tons capacity; 11.9 per cent. three to four tons capacity; 2.4 per cent. of five tons and 0.2 per cent. of more than five tons capacity. And the good roads programme which will be more than under way in 1920 will greatly increase production of one and two-ton truck models."

JAPAN NOW HAS HUNDREDS OF MOTOR TRUCKS.

There are now approximately 800 motor trucks in operation in Japan, although there were only about a dozen of them there a few years ago. There are now about 3000 passenger cars. Just at present it is reported the market is overstocked with American cars, due to poor business methods on the part of the importers and dealers.

Clark Equipment Co.'s New Employees' Hospital.

A modern hospital completely equipped for the care and treatment of employees has been built by the Clark Equipment Co., manufacturer of internal gear drive axles and disc steel wheels for motor trucks, at its Buchanan, Mich., plant. While intended primarily for the employees of the company the hospital is open to and is being used by the citizens of the community as well.

The operation of the hospital is directed by the Clark Hospital Association, composed of employees and representative citizens of the town. E. B. Ross, vice president of the company and Mayor of Buchanan, is president of the hospital association.

The hospital has at present 12 beds with provision for additional beds in case of unusual demands. There are several private rooms and wards with a number of beds in each. The nurses have commodious quarters with all modern conveniences.

The medical staff consists of several local physicians and a resident hospital staff of three trained nurses. Additional trained nurses are called in as the number and care of patients require. The physician make frequent visits, performing operations when necessary. The township has appropriated $2000 yearly as an acknowledgment of its public service and encouragement in its work.

The operating room is completely equipped with modern hospital appliances, including instruments necessary for performing all major operations. A model laboratory and X ray equipment has been provided, thus giving the hospital the most modern and complete furnishings.

Located on a high bluff overlooking the parkline plant of the company and within a short distance of the employee's subdivision, the hospital is in an ideal position, making it easy of access in case of emergency accident treatment, epidemics such as the "flu," as well as to care for maternity cases in the families of employees and community residents.

The plans for the hospital were made more than a year ago as the result of a medical survey of the community made by the Clark Equipment Co. when it was found highly desirable to provide adequate facilities for the care of employees in time of sickness. The hospital was completed a short time ago and is now in operation.

GOODYEAR TRUCK CARAVAN FOR BOY SCOUTS OUTING.

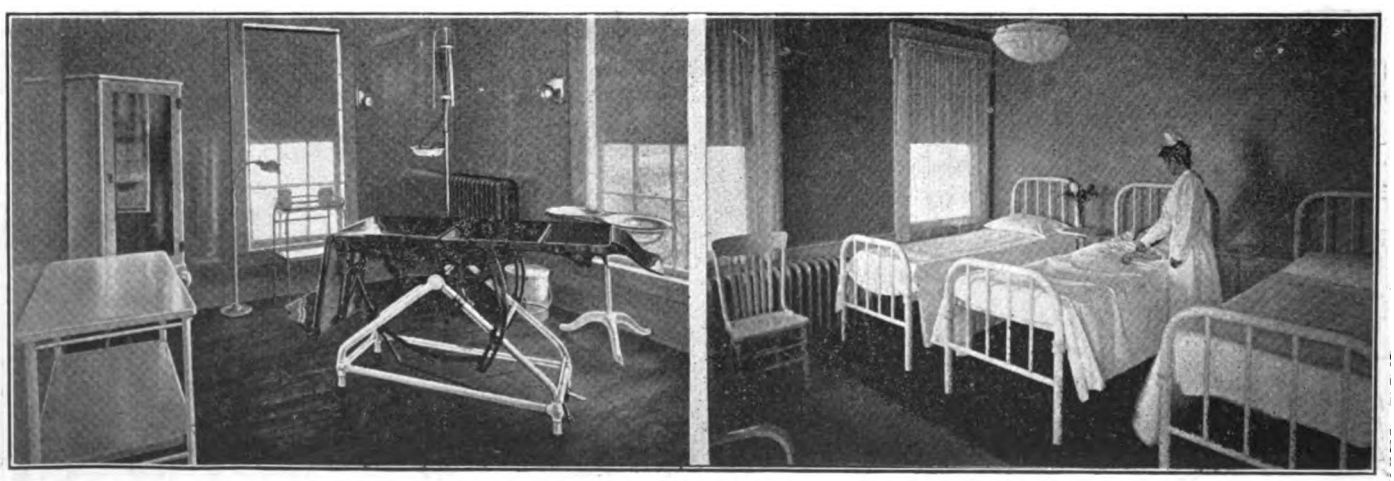
A motor truck caravan with 50 Boy Scouts will start from Akron, O., June 26, the route to include Niagara Falls, Syracuse, Utica, Albany, Plattsburg, Burlington, St. Johnsbury, Portland, Boston, Providence, New Haven, West Point, Binghamton, Ithaca, Elmira, Jamestown and Youngstown. The trucks will be furnished by the Goodyear Tire and Rubber Co. and will be diverted from the Akron-Boston express line operated by the company.

The purpose is to demonstrate how troops may be transported in motor trucks. The party will camp in true Boy Scout fashion at night, although the trucks will be fitted with double-deck berths and will be manned by a double shift of drivers, so that travel may continue day and night when necessary.

Moving pictures will be taken on the trip and these will be shown throughout the country by the National Council of Boy Scouts.

U. S. STEEL EARNINGS SHRINK.

During the first quarter of 1919 the earnings of the United States Steel Corporation amounted to $33,513,384 as compared with $56,961,424 in 1918, $113,121,018 in 1917 and $60,713,624 in 1916, this being the smallest total since the United States entered the war. With the deduction of depreciation and sinking fund charges, interest, premium on United States steel bonds, there was a balance of $17,481,016 as compared with $42,940,277 in 1918 and $97,744,756 in 1917. After the deduction of preferred and common dividends the surplus was $4,822,316, as compared with $15,032,502 in 1918 and $69,836,981 in 1917.



The Employees' Hospital of the Clark Equipment Co., Buchanan, Mich.: At Left, the Admirably Equipped Operating Room; at Right, One of the Several Wards for Patients.

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OVERHAULING GMC TRUCKS

Restoration and Adjusting That Can Be Done with Tools and Equipment of the Average Garage—Some of the Characteristics of the Several Different Chassis.

OVERHAULING a truck chassis is usually regarded as a work that can only be done with special facilities and by men of long experience, but as a matter of fact it may be done by any man of mechanical knowledge who will follow the construction carefully and be certain of the conditions obtaining and make the adjustments and renewals that will afford normal functioning. This article applies especially to GMC trucks and covers the series generally.

The tools actually required for the work are comparatively few, for the kit included in the original truck equipment is usually sufficient. It is well, however, to add to this a set of socket wrenches and an assortment of S wrenches, as these will be found very useful for loosening and tightening nuts and bolts, especially those of the engine, clutch and transmission gearset. One can add as many extra tools as may be believed necessary and yet not have what will serve every precise requirement. The tools mentioned will be all that are needed for general overhauling work that may be done without machine equipment.

A suitable place in which to do the work is necessary. Nearly all owners have garages in which their trucks are kept and if a garage has a dry floor it will be reasonably suited for the work, as it will be necessary for the workman to lie upon the floor at times and a dry surface is really essential for comfort. No matter what the condition of the floor a creeper will be found very handy. This consists of a slatted platform, raised from the floor about 1½ inches by castors or rollers that facilitate its movement, on which the repairer may lie while doing work underneath the chassis. A creeper may be made at home or purchased from any supply house dealing in automobile and truck accessories.

Inspection of the Cooling System.

In the general overhaul of GMC trucks it is well to first examine the cooling system. The GMC series includes five sizes, 1500 pounds, 1½, two, 3½ and five-ton capacities respectively, which differ according to the model and tonnage of the chassis.

The cooling system of the three-quarter ton truck consists of a pump for circulating water through the engine jackets and the radiator, which is driven by a gear in the front end of the engine. The radiator is of the two-section tubular type, consisting of an outer shell covering the radiator and an inner core with the tank attached at the top. The radiator is finned tube type. The tubes are vertical and the fine or strips of radiating metal are horizontal or crossways and space the tubes. The radiator is fastened to the frame by two bolts and is seated on large leather washers to cushion the vibration.

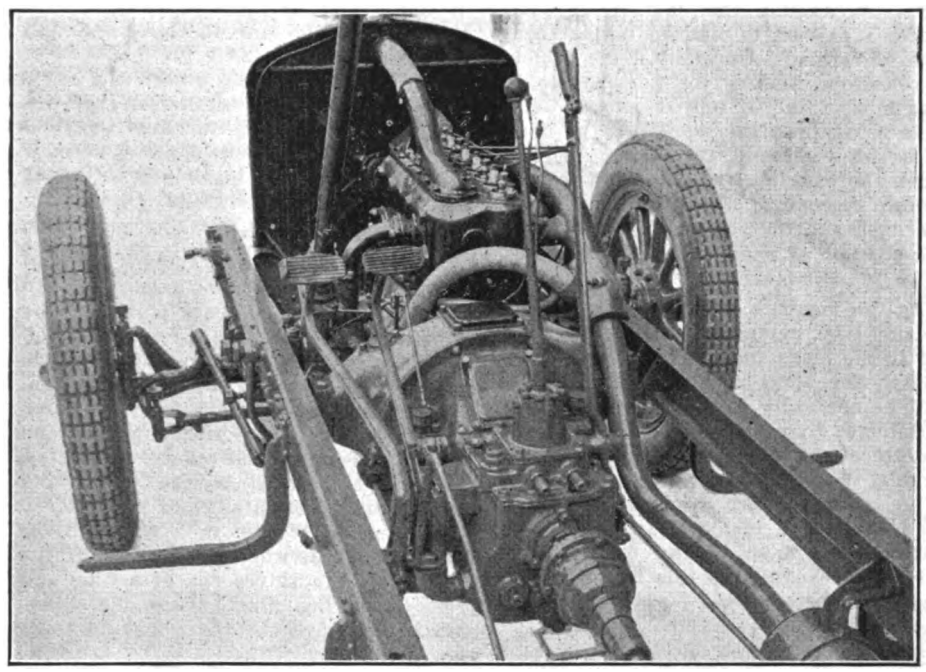
If there are no leaks in the radiator it may be washed out with a solution of common washing soda, dissolved in water in the proportion of about one cup of soda to two gallons of water. Fill the cooling system with the solution, start the engine and run it with a retarded spark for 15 or 20 minutes until the solution is hot and has well circulated through the water jackets and radiator. Drain off this solution and fill with clean, fresh water, using a hose if possible.

In the event of leaks, unless quite familiar with the use of a soldering iron, one had better take the radiator to a repair shop doing this class of work. However, if the owner decides to repair the radiator he can remove it from the frame by disconnecting the hose connections at the top and bottom from the engine, removing the brace rod from the top of the radiator to the dash and loosening the bolts holding the radiator to the frame. The unit may then be lifted and placed upon a bench or horses.

Testing the Radiator for Leaks.

To test the radiator for leakage, solder circular pieces of tin over the inlet at the bottom and the outlet at the top and the opening at the bottom of the overflow. With these three openings closed only the top or filler cap is open. Into this fit an old cap having a tire valve soldered into the top. Connect an air pump to this valve and place the radiator in water deep enough to cover it, laying it front down. With the pump force air into the radiator, being careful not to have too great a pressure, as this would burst the tubes. The leaks will be shown by air bubbles rising to the surface of the water. Mark the spots with a scraper so that they may be seen after taking the radiator from the water.

Allow the air to escape from the radiator and close the leaks with solder and a hot iron, using a soldering flux to make the solder stick. The metal around the leak should be scraped with a knife or scraper made from an old three-cornered file ground to a point.

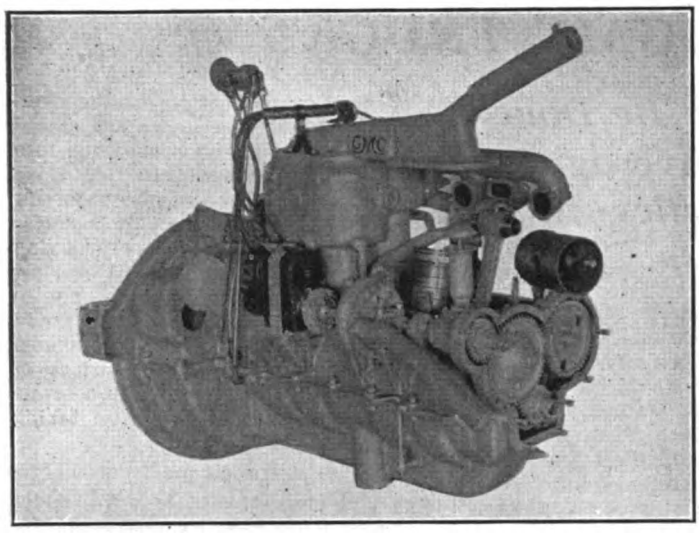


The Unit Power Plant and Auxiliaries of the Model 16, 1500-Pound Chassis, Typical of This and the 1½ and Two-Ton Machines.

The radiators of the 1½, two, 3½ and five-ton trucks differ slightly from the radiator just described in that they are made of five separate units instead of two, consisting of an upper and lower tank, two side members and the core. Repairing this construction is somewhat simpler in that the side members and the top and bottom members may be disassembled to work on the core. The work on this type of radiator does not materially differ from that previously described.

The water pump is a centrifugal type for all models and consists of a rotor or impeller mounted on the shaft that operates the magneto, and is driven from the timing gearset. The rotor is fastened to the shaft and is driven by it. In case of accident or freezing the pump side of the case may be removed and a new rotor supplied.

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The Engine of the 3½ and Five-Ton Trucks, Having Independent Transmission Gearsets, with the Forward Cylinder Unit Removed.

Removing the Engine from the Chassis.

In overhauling the engines of GMC trucks it is best to plan on taking them from the frames, especially if the vehicle has been in service for a considerable length of time. If only a partial overhaul is required the work may be done with the engine in the frame. To remove the engine after taking off the radiator, disconnect the oil piping from the dash and the engine, taking note of the position of each section and tagging it for reassembling.

As the magneto is an Eisemann high-tension type, having five wires, four leading to the plugs and the fifth to the dash switch for short-circuiting purposes, it will be necessary to disconnect the wire terminals from the plugs, tagging for identification of terminals. Lay them against the magneto for removal later.

Loosen the short machine bolts that hold the water manifold to the engine and remove them, taking care to preserve the packing, as this may be used again if not damaged. Next shut off the gasoline at the tank and disconnect the feed pipe at the carburetor. The carburetor and manifold may now be removed as a unit by loosening the bolts that hold the manifold to the side of the the engine.

The exhaust line is next removed from the opposite side of the engine by loosening the bolts that hold it to the side of the engine in the three-quarter, 1½ and two-ton truck, and on the same side in the 3½ and five-ton truck. The engine used in the three-quarter, 1½ and two-ton trucks is en bloc construction that is, the cylinders are cast in one piece. while in the 3½ and five-ton models they are cast in pairs.

The next operation is to remove the clutch housing at the rear of the engine. This housing is held in place by nine short machine bolts in the smaller en bloc engines and by 12 in the larger engines. The engine is suspended at three points, one at the front and two at the rear. The front suspension point rests on the front cross member of the frame being retained by a special split casting bolted together, with a spring holding the top half always tight on the bearing. No adjustment of this is required. The two points of suspension at the rear consist of arms at the side of the engine case fastened to supporting arms on the frame members, and this is the practise in all models of GMC trucks.

Loosen and remove these bolts, two in each arm at the rear and two at the front. The engine may now be lifted from the frame by slipping a rope twice around it and bringing the ends together and tying them, spreading the loops under the engine case and crossing the tops to make a sling. Suspend a chain fall from an overhead beam or, if you have it, from the center of a crane. Wheel the truck beneath the fall, pass the hook of the chain through the loop of the sling and hoist the engine from the frame. It may then be moved to a stand so it may be accessible on all sides.

Grinding the Valves and Seats.

The fan should be removed so that any future work will not damage it. To grind the valves the spark plugs and the caps in which they fit are removed. The caps can be started with a drift wrench, after which they may easily be removed. Loosen the nuts holding the side plates that cover the valve mechanism on the side of the engine and remove the plates. This gives access to the valves and springs and facilitates their removal.

With a valve lifter or a screw driver and a block of wood for a rest, lift the springs of the valves one at a time and remove the fastening keys in the stems. Mark the valves before removing them and grind them with a good prepared grinding compound. Do not use emery which has a tendency to work into the grain of the iron later on and cause damage.

Place a piece of waste inside of and between the valve and the combustion chamber so that the grinding compound cannot work into the cylinder and damage both piston and cylinder. Grind the valve in a rotary manner, turning a quarter turn in one direction and then reversing the movement, using either a valve grinding tool or a screw driver to turn the head of the valve, holding the handle between the fingers and rolling it without pressure. If necessary rub off the carbon on the face and edge of the valve and seat with the edge of a file.

Then smear the face of the valve with a small amount of the compound moistened with oil. Placing a light spring below the head of the valve will have a tendency to lift the valve easily from the seat when the weight of the tool is taken off it. Withdraw the valve after a few moments grinding, wipe off the abrasive and smear with fresh compound and repeat the process till a bright ring about 1/32 inch wide shows all around the circumference of the valve. Repeat the process with each valve until all are ground.

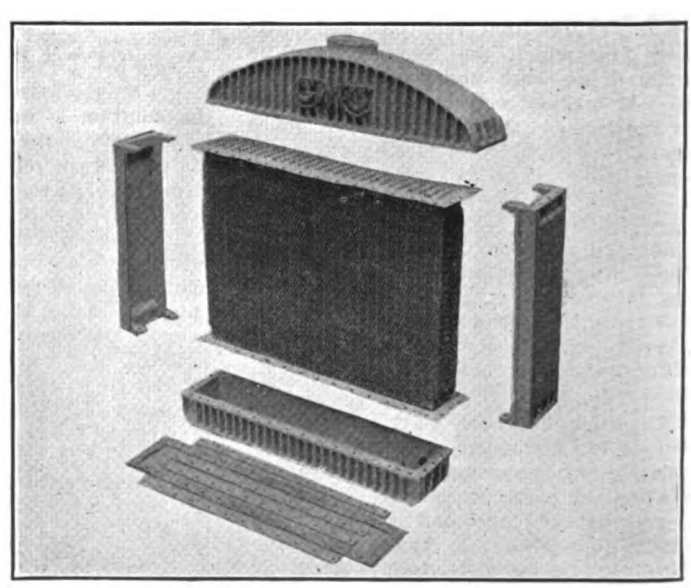
A feature of the Continental engine in GMC trucks is that the valves are interchangeable, that is, the inlet may be placed in the exhaust and the exhaust in the inlet.

Removing the Carbon Deposits.

Removing the carbon from the engine may be done by the oxy-acetylene method of burning or by scraping. The manufacturer does not recommend burning the carbon and scraping can best be done by removing the cylinders from the engine base. To do this loosen the bolts along the engine base at the lower edge of the cylinders, remove them and lift the block of the smaller engine and the pair of cylinders of the larger clear of the engine base and pistons.

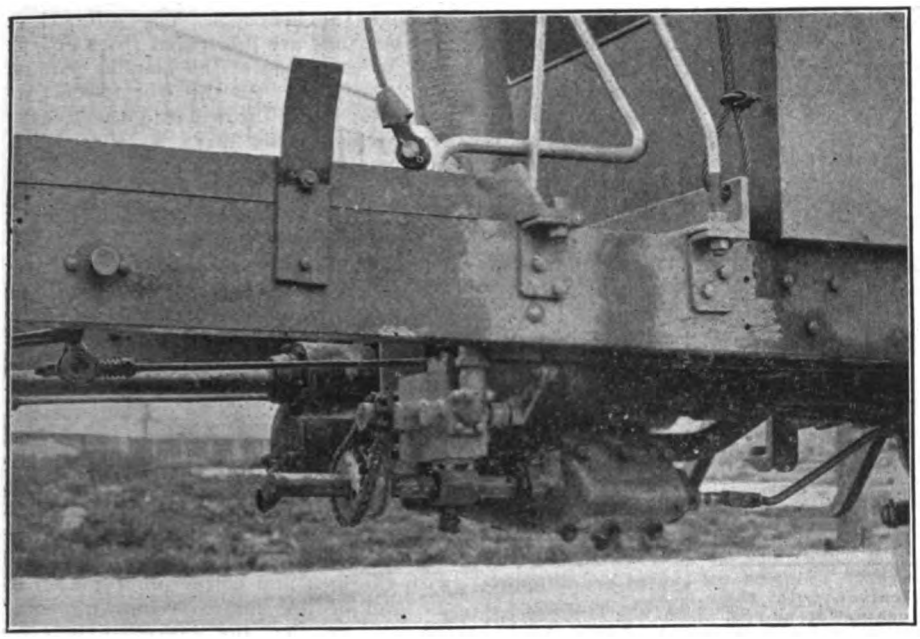
By inverting the cylinders the carbon may be scraped from them, using a soft metal scraper so as to avoid scratching the surface of the metal. After the cylinders are scraped the piston heads next need attention and should be scraped in like manner. While the cylinders are removed one should examine the piston rings and remove the carbon from beneath them.

This may best be done by springing the rings and placing small, thin pieces of metal in strip form beneath them, commencing with the top ring, and slid-



The Radiator of GMC Trucks Disassembled, the Cooling Section, Top and Bottom Tanks, Side Columns and Gaskets Clearly Shown.

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The Transmission Gearset of the 3½ and Five-Ton Trucks with a Power Take-Off Coupled to Drive the Pump of a Hydraulic Hoist.

ing a strip underneath and pushing it around to one side. Then place a second and a third strip in like manner, spacing them an equi-distance apart. The rings can then be easily slipped over the tops of the pistons. Mark each ring with a tag so that it may be returned to its original groove. The carbon can be removed with a scraper or a screw driver.

The wristpins may be examined and if excessive wear is found they had best be replaced with new bushings. The wristpin should fit the connecting rod bushings with very little end play and no side play. Side play will cause a knock. The pins should fit the bushings snugly, but not so snug that they cannot be moved freely.

The engine base should next be removed. This is done by loosening the bolts and nuts, securing the upper and the lower halves of the crankcase. With these loosened the lower part of the base may be dropped, exposing the crankshaft bearings. The oiling system will not prevent this being done as there is only a suction pipe extending into the base, and when the base is dropped the oil pipe frees itself from the strainer in the bottom of the case.

Refitting the Engine Bearings.

Loosen the cap of the main bearing next to the front of the engine and remove the shims one at a time from each side. Tighten the nuts after removing the shims and try the shaft with the starting handle till a slight drag is felt at the handle. Then remove the cap and apply a coat of Prussian blue to the face of the bearing, and tighten the cap with more pressure than before. Now turn the shaft with the handle. It will turn harder. Remove the cap and examine the Prussian blue. If the blue shows a coating smoothly covering the shaft and bearing it is all right as a bearing surface.

But if contacts only in spots these will have to be removed by scraping with a hand scraper. Repeat the filling until the blue shows a clean fitting bearing all over. Leave the cap slightly loose and repeat with the second and third main bearings. Fit the connecting rod bearings in the same manner as the main bearings. When all are finished tighten the bearing caps to secure seats, being sure that the oil ways are positioned with relation to the feed, squirt a small quantity of oil into the end bearing, as this will insure easier starting.

Reassembling the Engine.

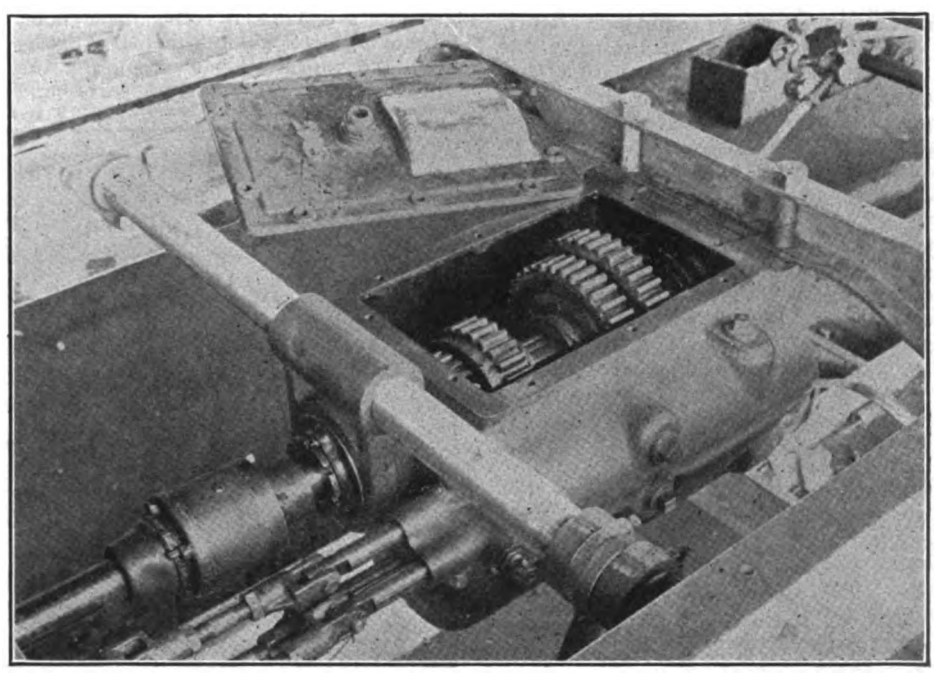
In assembling the engine, reverse the process of disassembling—that is, attach the base of the engine first, putting in a new gasket if necessary, and be sure that all bolts and nuts are securely fastened. The rings are next put onto the piston grooves in the same order in which they were removed, using the metal strips for inserting them.

After the rings are in place rub oil over the pistons to insure free movement in the cylinders. Place the cylinders in position, being sure that the piston rings enter the bores squarely. Supply a new gasket or new gaskets for the cylinder units if necessary. Heavy brown paper will serve for this purpose nicely. Fit it carefully and give it a coat of shellac. Tighten the bolts securely. Put the valves in place, replacing the springs and secure them with the small keys at the bottoms of the stems. Screw in the valve caps and spark plugs at the tops of the cylinders, setting up the caps with a drift wrench or a square end punch and hammer.

Clutch and Transmission Gearset.

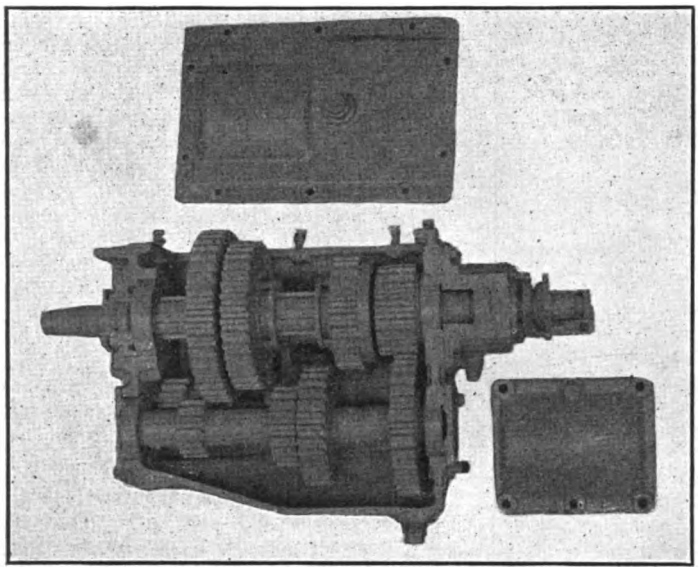
The clutches used for GMC trucks are a multiple dry disc type. The only oil necessary is used for the bearings. This form of clutch is used for all models, the only difference being that they are proportioned to the load capacity of the chassis. The bearings are of ample proportions and provision is made for adequate lubrication. The bearings are of the annular ball type and are retained by thrust washers on each side. The adjustment is obtained by throw out arms on either side of the collar. These arms may be moved back or forward by means of the link of the adjustable push rod connected to the clutch release pedal. The fingers should fit squarely in the center of the collar without touching either side. As the plates of the clutch wear it becomes necessary to make this adjustment more often. In case the clutch is badly worn the parts should be replaced with new.

The clutch and transmission gearset is combined with the engine in a unit power plant for the three-quarter, 1½ and two-ton chassis, and is a selective sliding gear type with three forward speed ratios and reverse. In the gearsets for the 3½ and five-ton chassis is a



Transmission Gearset of a 3½-Ton Chassis Mounted Admidships, with the Cover Removed to Expose the Gears and Control Rods.

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Sectional View of a 3½-Ton Transmission Gearset with the Covers of the Case and Power Take-Off Housing Removed.

similar type with four forward speed ratios and reverse. The larger units are equipped with power takeoff for operating a hydraulic body hoist or a winch or pump. In case of accident or wear the shafts and gears are readily removed from the case by removing the end bearings. The gears are made of unusually heavy high test carbon steel and the shafts are mounted on ball bearings.

The Four-Speed Transmission Gearsets.

The transmission gearsets of the 3½ and five-ton trucks are amidships on three points suspension that will protect them from stresses of frame distortion. The sliding gears are mounted on a shaft having six splines with liberal wearing surfaces. The countershaft gears are very easily removed as they are keyed to the shaft. No cup grease of any description should be used for lubrication of the gearset. Use a heavy high grade engine oil. Any good oil that will stand a cold test of zero or below, such as 600-W or its equal, will be found satisfactory.

The plate or opening on the right side of gearset case is for installation of a power take-off. By removing this plate a two-speed gear box, which may be controlled from the driver's seat, can be installed for driving a hoist, pump, power winch or any other desired equipment may be driven by the truck engine. The operating lever is installed on the emergency brake lever shaft. The regular power take-off equipment as shown in an accompanying illustration has two speed ratios, one 87 per cent. of the engine speed, the other at 147 per cent. There is a neutral position for the lever. This take-off is controlled entirely by the engine clutch in the following manner: First, place the transmission gear shift lever in neutral position, release the clutch, engage the power take-off with the short lever in the desired speed and engage the engine clutch. Release the clutch before disengaging the power take-off gear.

Adjustment of Bearings.

The gearset bearings in later built trucks are annular ball and need no adjustment, but those of earlier models are roller type that require adjustment from time to time. Provision is made at the ends of both the main and counter shafts for such adjustment, by screwing the bushings in or out.

The universal joints in the drive shafts of GMC trucks are the same construction, there being three joints in the four larger chassis and two joints in the shaft of the smallest truck.

In the four larger chassis the shafts are supported by bearings at the rear end of the forward section that are mounted on cross members of the frames. This insures alignment of the shafts and prevents their whipping.

No adjustments are necessary, the only attention required being to keep the joints well supplied with lubrication.

Two Types of Rear Axles.

The rear axle of the 1500-pound truck is a three-quarter floating type. The drive shafts are mounted on ball and roller bearings, carry no weight. The drive is through a bevel pinion and ring gear, the drive pinion being mounted on ball bearings and the differential gearset on Hyatt roller bearings. The axle shafts are readily removed by loosening the nuts that hold the hub caps to the wheels and withdrawing, leaving the wheels secured to the housing of the axle.

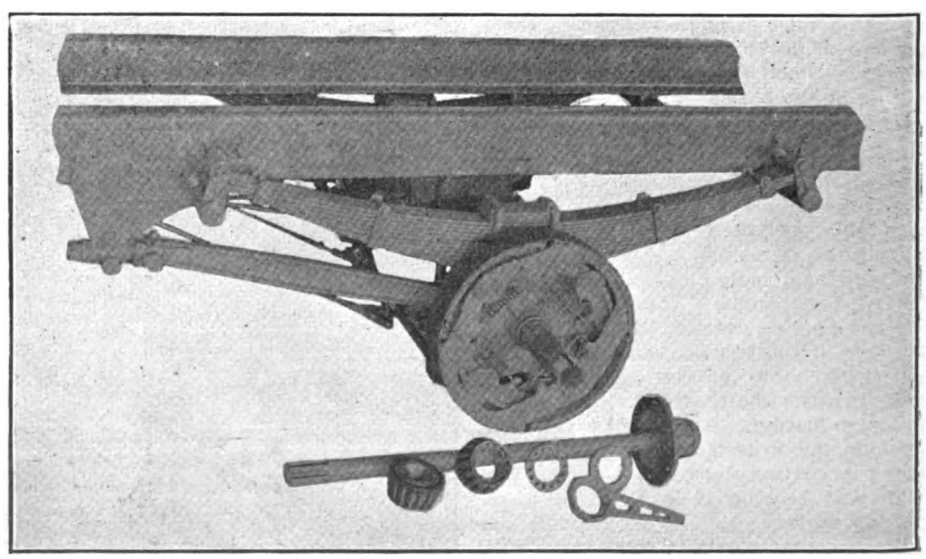
In the 1½, two, 3½ and five-ton trucks the rear axles are a full floating type with worm and worm wheel drive. The bearings are Timken roller throughout. All moving parts are lubricated by baths of oil, the worm wheels circulating the lubricant over all moving parts and through the bearings. The worm shaft end bearings are lubricated from troughs cast in each side of the housing parallel with the shaft. As the worm wheel rotates the oil is thrown into the troughs from which leads carry it to the shaft bearings, making a positive system of lubrication. No load is carried by the axle shafts, they driving the wheels only.

Adjustment of the worm shaft is accomplished by removing the cap over the end of the worm shaft at the rear and the lock and nut. This permits the removal of the washer and the bearing. Back of the bearing are several shims of various thickness. Remove the necessary number of shims to prevent the end play, and usually one shim is sufficient. Replace the parts in their original position, using exceptional care to see that nut is tightly drawn against washer (as adjustment must be made with shims and not with the nut) and securely keyed with the lock and cotter pin replaced in the end of the shaft. When replacing the cap see that the gasket is in good condition to prevent an oil leak. The shaft should be adjusted to a perfectly free running fit with no end play.

Adjusting Differential Gearset Bearings.

To adjust the differential bearings it is necessary to remove the complete carrier from the housing. Next disconnect universal joint from its flange on the worm shaft. Remove both rear axle shafts. When the cap screws have been removed from the flange the carrier may be raised out of the housing. Make all adjustments on the left bearing only as follows: Do not touch the right differential bearing as this will change the meshing of the worm shaft and worm wheel. (In determining "right" or "left" always face the direction of vehicle travel).

Remove the cap screw and lock and turn the bearing adjuster to the right, which will press the bearing cup tighter against the rollers. In making this adjustment care should be taken not to draw these bearings too tight. When there is no end play the adjuster should be backed off to free the bearing and locked. In adjusting the rear wheel



Section of a GMC Chassis with the Wheel and Drive Shaft and Bearings Removed, Showing the Spring and Radius Rod.

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bearings first jack the wheel free from the floor and then remove all nuts. This done the axle shaft can be removed from the wheel by withdrawing straight out. Then remove nut and lock and make the adjustment with adjusting nut. The wheels should be so adjusted that there is a barely perceptible shake, this must be determined by using a bar or pry under the wheel, for it is impossible to otherwise determine this play. It is good practise to examine the wheel bearings in the hubs at least every 6000 miles.

For lubricating wheels, fill the hub with light grease free from acid or grit. To lubricate the worm and worm gear remove the filler cap and pour lubricant into the housing until it reaches the level of the opening. Use only a high grade oil that will stand a cold test of zero or below. The oil should be drawn out occasionally and fresh oil supplied. Wear will not be found in a rear axle of this type, but if an axle should be worn considerably the parts should be replaced with new.

Steering Gears of Two Types.

The steering gears of GMC trucks are screw and nut types irreversible and adjustable. The adjustment is made at the bottom of the worm casing by a lock nut and a hollow adjusting nut. To loosen for adjustment unscrew the set screw at the side of the lock nut on the hollow adjusting nut and turn the lock nut until the screw will line with the slot in the adjusting nut. Then turn the two as one until there is no play in the gear. Loosen the screw and lock the end nut, setting the screw to keep it from turning. This adjustment applies to the four larger sizes, the small truck having a steering gear in which adjustment is made from the top with one nut by which the play of the gear may be taken up.

The carburetor used is the Marvel. The 1500-pound, 1½ and two-ton trucks have the one-inch size and the 3½ and five-ton trucks have 1¼-inch carburetors.

The adjustment is very simple and is made by a needle valve and an air valve. The carburetor is double jet type, providing fully for high and low speed work. Warm air is taken from the exhaust pipe by a flexible tube and enters the carburetor at the air intake side.

Care of the Magneto.

The magneto is the Eisemann high-tension with four wires leading to the spark plugs, and a ground wire running to the switch on the dash. In setting the magneto remove the inspection cover from the top of the flywheel housing. Turn the engine by hand till the piston of No. 1 cylinder is on dead center (firing point). Remove the distributor plate from the magneto and turn the driving shaft until the setting mark on the distributor disc is in line with setting screw.

With the armature in this position the platinum contacts are just opening and the metal insert of the distributor disc is in contact with the carbon contact of No. 1 cylinder. The driving coupling must now be fixed to the armature shaft without disturbing the position of the shaft, and the cables connected.

Clean the platinum contacts with gasoline until the surfaces appear quite white. If pitted, use a fine file, but very carefully, so that the surfaces remain square to each other. The correct gap for the points is 12/1000 of an inch. The regulation of the contact points is necessary from time to time and may be made by turning the screw at the side.

Too much oil on the expensive platinum breaker points is often the cause of trouble in magnetos of this type. A small quantity is required, but only occasionally. The oil holes at each end of the shaft should receive lubrication about every 1000 miles and then only one drop at a time. The firing order of the engines used is 1-3-4-2 and the wires should be so placed upon the plugs.

Reassembling the Chassis.

In putting the engine into the chassis frame care should be taken in lowering it so that the holes of the frame register with those of the engine. Replace the bolts and fasten them securely. Put the fan in place and put on the fan belt. Set the spark plug points and put them into the cylinders. The plug points are set with from 1/32 to 1/64 inch gap and if the gap is greater than this the engine may skip at slow speeds. Replace the bolts, securing the clutch to the bell housing of the engine case, being sure that all are tight. Fill the base of the engine with oil, putting in a quart more than is usually required. This is done to insure the bearings of the engine receiving plenty of oil at the start. Connect the gas manifold and the exhaust manifold, fitting new gaskets if necessary and tightening the bolts as securely as possible. Connect the feed pipe to the carburetor and turn on the gasoline at the tank. If all bolts and nuts have been securely fastened as the work has progressed the engine should be ready to start after putting the radiator in place and connecting the hose top and bottom. Fill the radiator with water and try to turn the engine by hand. If the motor is too stiff to start by hand, tow it with another truck. Let the motor run for 15 or 20 minutes to get limbered. Then stop the engine and test the nuts and bolts when heated with a wrench. One will find that many bolts and nuts can be tightened after the engine has become warm.

Oiling Systems of the Engines.

All G. M. C. engines are fitted with a triple check for the oiling system: First, the oil supply indicator, showing the volume of lubricant in the crankcase; second, the oil level petcock in the lower half of the crankcase, and third, the oil gauge on the dashboard. The oil capacities of the five models are as follows: 1500 pounds, one gallon; 1½ tons, one gallon; two tons, six quarts; 3½ tons, eight quarts; five tons, eight quarts.

The oil is circulated by one plunger pump in the 1500-pound chassis, 1½ and two-ton models, and by two plunger pumps operated from the camshaft in the 3½ and five-ton trucks. The oil is pumped from the base of each engine and forced to the bearings and the gauge on the dash, showing the pressure at the dash, and all excess or overflow is returned to the base. The oil in the engine base should be changed regularly at least once every two weeks and every week is better.

The governor used is an automatic type and is operated by the inrush of gas in the manifold and operates solely upon the throttle shutter, causing it to rise and fall with the governor shutter, thus controlling the gas flow. The governor is set for speeds of from 12 to 18 miles an hour, according to the size of the truck.

PREVENTION OF HUDSON RIVER TUNNEL CONGESTION.

Appropriations have been made and commissions appointed and authorized to begin the preliminary work for the construction of vehicle tunnels under the Hudson river between New York City and Jersey City. The construction of the tunnels has been agitated for a long time and the purpose is to build what will obviate the delay incident to the use of ferries, limited boat capacity, street congestion at ferries and from fogs and storm. The cost of the proposed tunnel will range from $12,000,000 to $15,000,000, but there is expectation that the charges for vehicle passage will be adequate to meet all operating charges and establish a sinking fund that will eventually pay the bonds that will be issued to defray the cost of construction.

There is great interest evidenced by those engaged in highway transportation in what is known as the Metropolitan District about New York, because of the time economies that will eventually obtain, and various organizations have made suggestions relative to location that will no doubt be considered in the engineering details. The Motor Truck Association of America, Inc., through its executive secretary, T. D. Pratt, emphasizes the need of the engineers of the tunnel locating the two entrances to the tube—the east and the west bound—such a distance apart that there will be minimum congestion of traffic. Mr. Pratt points out that if the traffic through the tunnel is as great as that across the Manhattan bridge, which is a conservative estimate, there will be great congestion and delay. If the traffic is separated, however, this will prevent concentration and insure the movement of vehicles in one direction only, which will be the best insurance that the expected benefits from the tunnel will be realized in fullest measure.

WILL BUILD TRUCKS PRINCIPALLY FOR EXPORT.

A company that will build power trucks is now being organized by J. Neil Patterson, who during the last part of the war was in charge of aircraft production in the Detroit district, so-called, and the intention is to locate a factory in Los Angeles, Cal. Statement is made that the concern will be financed by eastern and western bankers. The principal purpose of the company will be to export its products, with Australia, Japan, China, India and other Oriental countries as the main markets.

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ACME INCREASES PRICES ON TWO OF ITS TRUCKS.

The Acme Motor Truck Co., Cadillac, Mich., builder of Acme worm drive trucks, the series consisting of one, two, 3½ and five-ton models, announces a price increase on two chassis, effective July 1. The Acme model C 3½-ton and model E five-ton trucks are being increased in list $100 each. The Acme 3½-ton truck of improved design is now in production. This truck is equipped with a pressed steel heat-treated frame instead of a channel section unit, and with a Continental E7 engine with the flywheel enclosed. These improvements, with others, are accountable for the increase in price.

The company announces that the five-ton chassis model E has been repriced on an actual cost basis, this being practically the first year of production of this size, the price quotation heretofore having been nominal.

C. J. Helm, secretary and sales manager of the company, states that the first five months of 1919 show a marked increase in the sales over any previous corresponding period in the company's history, making necessary a largely increased schedule of production for the balance of the year.

The Acme body building department is being taxed to its capacity, producing bodies which are used exclusively on Acme trucks. A satisfactory foreign trade is now being established for Acme chassis, in addition to the domestic distribution being considerably increased so far the present year.

INCREASING TRUCK BODY PRODUCTION.

The Hugh Lyons Co., Lansing, Mich., has developed the production of its truck body department and is now devoting a considerable part of its plant to this class of product. The company is now producing about 30 bodies a day and expects to considerably increase this.

Will Drive Army Truck Train Across the Continent

WASHINGTON, June 16.—Plans have been completed by the Motor Transport Corps for the first transcontinental trip of an army motor truck train. It will start from Washington July 7 and end at San Francisco from 47 to 60 days later. Before the machines get away President Wilson is expected to dedicate a milestone in front of the White House to represent the starting point for highways radiating out of Washington.

The itinerary for the trip has not yet been completely worked out, but as far as possible the truck train will follow the Lincoln Highway, with detours at a number of points. It is the intention to utilize two full strength Motor Transport Corps truck companies to operate the train. In addition, there will be attached auxiliary and technical observation personnel from the Motor Transport Corps, the Engineer Corps, the Medical Corps, the field artillery and the air service.

Caravan of 57 Vehicles.

In the train will be five passenger cars, 35 trucks of all army types, two ambulances, six motorcycles, two tank trucks, two kitchen trailers, two water tank trucks, one engineer shop truck, one officer work truck and one searchlight truck, a total of 57 vehicle units.

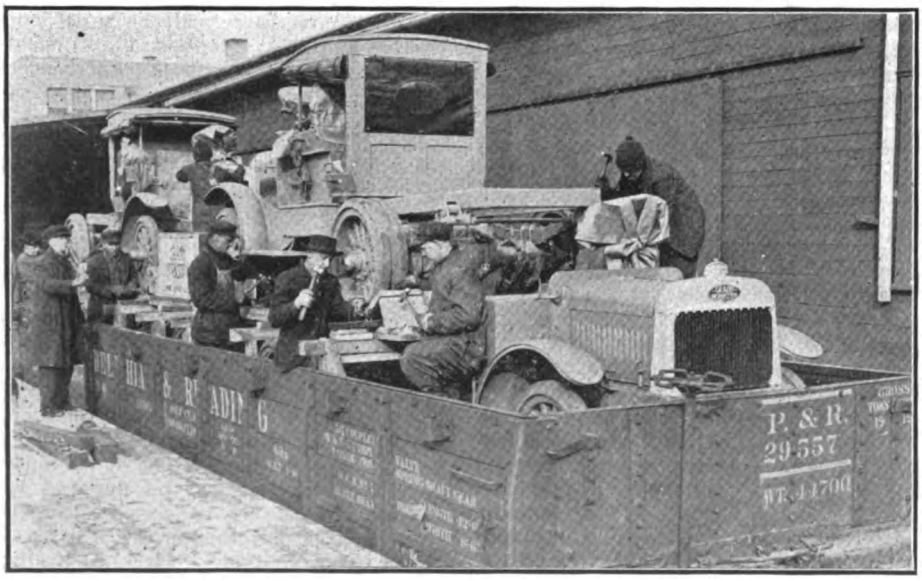
Purposes of the trip as outlined by the corps include tests of several standardized principal types of motorized army equipment used to transport troops and cargo; demonstration of long-distance motor post and commercial transportation; collection of data for use in connection with the training of commissioned and enlisted personnel of the motor transport corps; procurement of recruits for the corps, provision of opportunity for extensive studies in terrain observation, particularly by the field artillery, air service and engineer corps; encouragement of through route and transcontinental highway development as a military and economic asset and an exhibition to the people generally of the development of the motor vehicles for military purposes, "which is conceded one of the principal factors contributing to the winning of the world war."

Train Will Be Self-Sustaining.

"It is the purpose to preserve intact the entire convoy train throughout the movement from start to finish," said the corps' announcement. "It is further intended that the convoy will be self-sustaining in that it will not be permissible, or necessary, to depend in any way upon external assistance except for certain operating supplies, such as gasoline, oil and water. All repairs, adjustments or replacements to either the vehicles or their accessories will be accomplished by the maintenance personnel.

"Sufficient engineer personnel and equipment will accompany the convoy to perform any military field engineering functions as may be necessary, including the examination and strengthening of bridges, the removal or adjustment of road obstructions, drafting, duplicating and photographers' service. A medical detachment sufficient to care for any ordinary injuries or sickness will accompany the convoy.

"It is planned to simulate service conditions in that the personnel will be quartered either in the trucks or in military structures available along the route."



Car Economy in the Shipping of Gramm-Bernstein Trucks from Lima, O., the Smaller Chassis Being Nested on the Larger and Well Blocked.

GMC PROVIDING SHELTER FOR ITS WORKERS.

The General Motors Corporation, which through the General Motors Truck Co., tractor division, builds GMC-Samson tractors at Pontiac, Mich., is forced to extremes to provide houses for its workers. It has leased a hotel in that city, the Wellington, exclusively for their accommodation, is erecting a large apartment building and is equipping a part of the old Munroe plant for rooms that may be rented. These rooms are to be rented to single men.

ALL-POWER TRUCK CO. IN LARGER FACTORY.

The All-Power Truck Co., which was organized at Detroit during the war and has been located at a plant in Jefferson avenue, has removed to a new factory at 372-80 Fort street, that city, which is much larger and has been equipped with production facilities. Statement is made that it is the purpose of the company to manufacture 1000 trucks within the next few months.

INTERNATIONAL MOTOR SURPLUS.

According to the last report of the International Motor Co., New York City, the surplus of the corporation has increased from $65,481 in 1916 to $2,539,659 in 1918. The assets of the concern were $15,346,235 at the end of 1918, as against $12,704,372 in 1917 and $8,276,021 in 1916.

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AMERICA CAN EXPECT GROWTH OF AUSTRALIAN TRADE.

The trade of Australia before the war was practically divided between England and Germany, with a relatively small amount coming from the United States. This was largely due to the fact, Trade Commissioner A. W. Ferrin at Melbourne points out, that the principal exports of Australia—wool, gold, wheat, meat, hides and skins—were normally exported to the English market. The sympathetic feeling between Australia and America, which has grown up from the war, he explains, will tend to encourage trade between the two countries.

An Australian market for American goods ought to be especially desirable, as the seasons are the reverse of those in the United States, permitting the American manufacturers to make goods during the dull season for this trade, which has been accustomed to place its orders nine months ahead of requirements. One of the drawbacks is the question of credits, but Australian bankers realize the situation and are willing to make arrangements with New York banks to pay American manufacturers for their goods upon the receipt of invoices and shipping documents, when properly authorized by Australian merchants who will pay the interest, exchange and collection fees upon terms prearranged with the bankers.

Australian merchants feel that, while it would be advisable for representatives of American firms to make trips to the Australian market in order to establish connections, local agents could conduct the actual business more satisfactorily, owing to their knowledge of the financial standing of local concerns, of the best time to make shipments, and of the grade of goods required.

GOODYEAR TIRE PRODUCTION NOW EXCEEDS 25,000 DAILY.

With nearly 25,000 persons on its payroll the Goodyear Tire and Rubber Co., Akron, O., has increased its production to a total of more than 25,000 tires of all types daily, and this is expected to increase to a total of 35,000 before the end of June. This is said to be the largest tire production of any one company in the world.

Driving Farm Tractor From New York to Los Angeles

A road trip that begun at New York City and will end at Los Angeles, Cal., is now being made with a farm tractor equipped with road wheels, this being the project of L. B. Cravath, vice president and general manager of the Hession Tiller and Tractor Corporation, Buffalo, N. Y., maker of Wheat tractors.

The outfit left New York City May 29 with no definite time fixed for completion of the journey. The crew consisted of former army men, including Lieut. T. H. Irwin, formerly an army aviator; Lieut. Robert E. McKenzie, who served in the Tank Corps, and Lieut. Howard S. Tiffany, who was in the Ordnance Department. They are driving the machine in shifts and the intention is to make the journey so far as is possible by daylight.

The itinerary as determined was via Trenton, N. J.; Philadelphia, Harrisburg, Reading, Pittsburgh, Canton, O.; Akron, Cleveland, Dayton, Indianapolis, Ind.; South Bend, Chicago and thence by the Midland Trail, Pikes Peak Highway and the Pioneer Way. The tractor is equipped with road wheels and solid Firestone tires, which are standard equipment, and it is hauling a trailer on which is carried a three-bottom plow and a set of wide rimmed cleated tractor wheels suited for field work. Statement is made that the wheels can be changed in 20 minutes—in about the time required to change the wire wheels of a passenger car. This done the tractor is ready for field work.

This is the first long trip with a farm tractor, and the object is to demonstrate that a farm tractor can be worked as efficiently on the highway as in the field with good equipment. Another purpose is to evidence that in the event of war or other emergency where large defensive operations are necessary, tractors can be equipped with road wheels and made instantly available for hauling artillery and for other transportation needs. The general conception of the farm tractor is that it is a heavy, cumbersome, slow machine, primarily intended for agricultural work and there is no realization of the utility that the trip now being made is to establish.

CRATING ECONOMY FOR OVERSEAS SHIPMENTS.

Shipments intended for export must be crated if anything like full protection is to be obtained, and experience has taught that as a rule partial disassembly is necessary or desirable that the shipping unit shall be the smallest in size that is practically possible. Packing safely and to minimum proportions can only be done by careful study with full knowledge of shipping requirements.

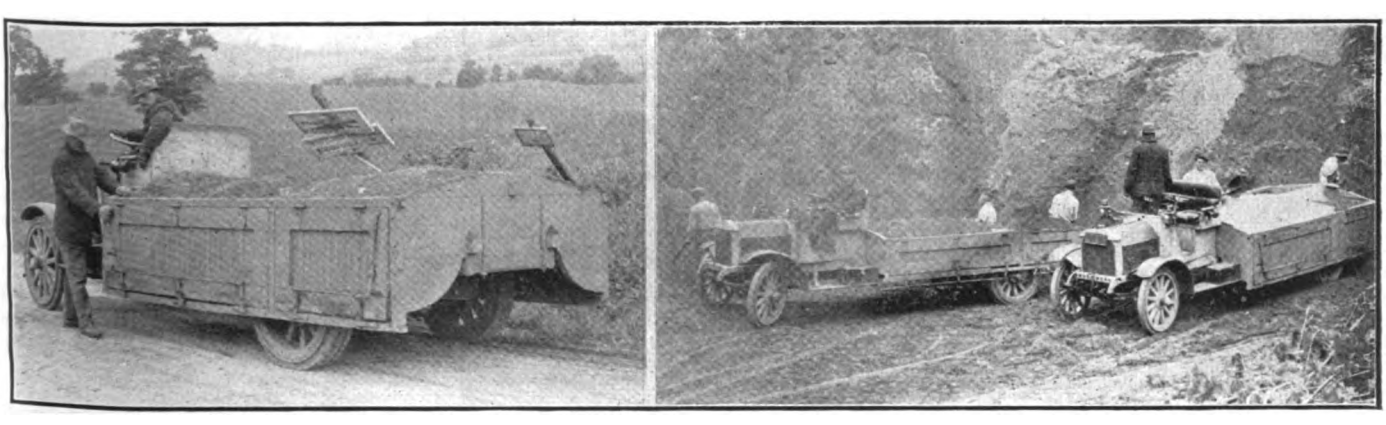
There are those who maintain that quite as much engineering skill is necessary to crate and ship large products, such as tractors, trucks, machinery, etc., as is required to build them, for the purpose is not only minimizing gross weight, but cubical footage, for the freight rate is based on either. If the shipment is to be hauled by railroad this conservation of space applies equally as well, and the charge will be in ratio to the care given to packing.

To illustrate the possibilities the Denby Motor Truck Co., Detroit, so packs, crates and ships its machines that six trucks, one five-ton, one three-ton and four one-ton chassis can be placed on a 40-foot flat car. In this instance bulk is minimized and the machines are thoroughly protected.

LEWIS-GEER MANUFACTURING CO. EXPANDING ITS PLANT.

The Lewis-Geer Manufacturing Co., Ypsilanti, Mich., builder of wagons, is erecting two buildings, 48 by 60 feet and 32 by 42 feet, to meet the demand for increased production facilities, and the capacity of the plant will be increased about 50 per cent. The company will then turn out from 250 to 300 wagons a day. Statement is made that it is now three months behind its orders.

The company recently issued new stock to obtain more capital, and the employees were anxious to take it all, so it was divided between them and the other stockholders. According to the company the demand for wagons was never as pressing.



Federal Trucks with Side Discharge Bodies: At Left, an Equipment Designed to Distribute a Load from Compartments; at Right, Two Units Loading at a Sand Pit.

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RAILROADS QUICKEN SERVICE WITH TRUCKS.

A plan for quicker transportation by railroad and water line which involves the use of power freight trucks has been developed by the Michigan Central, the Muskegon interurban and the Chicago, North Shore and Milwaukee railroads, the last two electric, and the Crosby line of steamers from Muskegon to Milwaukee. The object is to serve all Central Michigan points reached by the Michigan Central road, and many cities and towns in Illinois and Wisconsin.

All freight originating on the Michigan Central railroad will be delivered to the Muskegon interurban road at Grand Rapids by truck and with freight from that city delivered to the Crosby line at Muskegon, and in turn it will be transferred from the pier at Milwaukee to the Chicago, North Shore and Milwaukee road, which will send two trains a day south to Racine, Kenosha, Waukegan, Libertyville, Great Lakes, Lake Forest and Evanston, and delivery at any of these places will be the morning of the second day after shipment from Grand Rapids. There is expectation of extending the service to Chicago. The rates will be somewhat more than ordinary freight, but will be less than express.

GENERAL MOTORS BUILDING 1000 HOUSES AT FLINT.

The General Motors Corporation, which has very large manufacturing plants at Flint, Mich., to provide homes for its employees, has begun the construction of 1000 houses in one section of that city which will cost approximately $4,000,000. The work was begun about May 1 and it will be continued throughout the summer and autumn. More than 700 men were brought from the East by the Dupont Engineering Co. to engage in this construction work. The shortage of houses is so great in Flint that only by building homes for them could the company attract workers to its plants. Statement is made that from 7000 to 10,000 houses will be needed to supply the demand in that city alone.

Revenue Bureau Rules Truck Chassis Tax is 3%

Under the rules originally promulgated by the Internal Revenue Bureau of the Treasury Department (the department interpretation of the law) for the application of the excise tax on automobile vehicles was that "a chassis is a part of an automobile and taxable at the rate of five per cent. when sold separately regardless of whether it is a chassis for an automobile truck or wagon or for any other kind of automobile."

This ruling was retroactive to Feb. 25 and until the announcement of the rules manufacturers and dealers sold chassis for trucks or freight carrying vehicles and collected from the buyers the amount of the war tax determined by the valuation of the unit. This was following custom, because probably 90 per cent. of truck chassis had been sold without bodies. There were two reasons for this. Truck manufacturers as a rule could supply only a few standard types, not generally manufacturing bodies to specification, and preferred not to engage in body production, regarding this as a separate and distinct industry. Many owners required special bodies that could only be produced by specialists, and desired to have these constructed by other or local builders with whom they could confer and who would study operating conditions incidental to making design. The added cost was partly compensated by the reduction of shipping cost.

The ruling resulted in a very vigorous protest to the Internal Revenue Bureau, because the manufacturers and dealers claimed the chassis was a complete unit of sale and was not a "part" that entered into vehicle construction. Seemingly the bureau had regarded truck sales as identical with passenger car sales, as cars are seldom sold unless equipped with bodies. Not only this, claim was made that following custom and the interpretation of the ruling of the previous year the dealers had added but three per cent. to the sale price for war tax, and could not recover on sales already made the difference between the amount received and the five per cent. exacted by the government. The manufacturers might collect the additional tax from their sales representatives because of the contracts existing, but the dealers seemingly could not do this without endangering future trade relations at least, and might meet with flat refusal to pay.

There was another phase. If a dealer bought a chassis for a customer and built and installed a body he became a "producer" and the chassis tax would be three per cent. and he was compelled to tax the body to the buyer as a "part" at five per cent. If the chassis and body were bought separately the tax was five per cent. on each.

Reconsideration of the ruling was asked for and this resulted in the substitution of the next to the last sentence of article 45 of regulations 47, which read as follows:

"A chassis is a part of an automobile and taxable at the rate of five per cent. when sold separately regardless of whether it is a chassis for an automobile truck or wagon, or for any other kind of automobile."

By the following definition and qualification:

"A chassis provided with a superstructure of such design that it is without substantial additions adaptable for hauling heavy loads is an automobile truck or automobile wagon and taxable at the rate of three per cent. A chassis not so equipped is an 'other automobile' taxable at the rate of five per cent. Unless the manufacturer has actual knowledge that the chassis is to be used as an automobile truck, or automobile wagon, or has in his possession at the time the chassis is shipped or sold (whichever is prior) an order or contract of sale with a certificate of the purchaser in writing, printed thereon, or permanently attached thereto, showing that the chassis specified in the order is to be so used, the tax shall be five per cent. upon the manufacturer's selling price."

According to this a truck or other chassis with such body equipment that it may be used for hauling heavy loads is taxable at three per cent., the same as by previous year's rulings, and a bare chassis that is sold by contract to which a purchaser's certificate of intention of use is attached shall be taxed three per cent. But without such certificate the tax shall be five per cent. While not so specified there is reason to assume that this ruling will apply to sales on which the tax is retroactive, although the ruling cannot be literally applied with reference to the required certificate to such sales.

The application of the ruling is decidedly interesting to all persons who have use for trucks. The ruling specifies that no tractor, used either with a semi-trailer or trailer, nor trailer units, shall be subject to the tax. There is reason to believe that the intent of the framer of the law was that farm tractors should not be taxed, but as this was not specified both road tractors and farm tractors are exempted. Seemingly there is no other interpretation.



Fruehauf Semi-Trailer Bodies, Mounted and Demounted, Used with Much Economy by a Western Baking Company.

The American Tractor and Implement Co. has been incorporated at Cincinnati, O., with capital of $400,000.

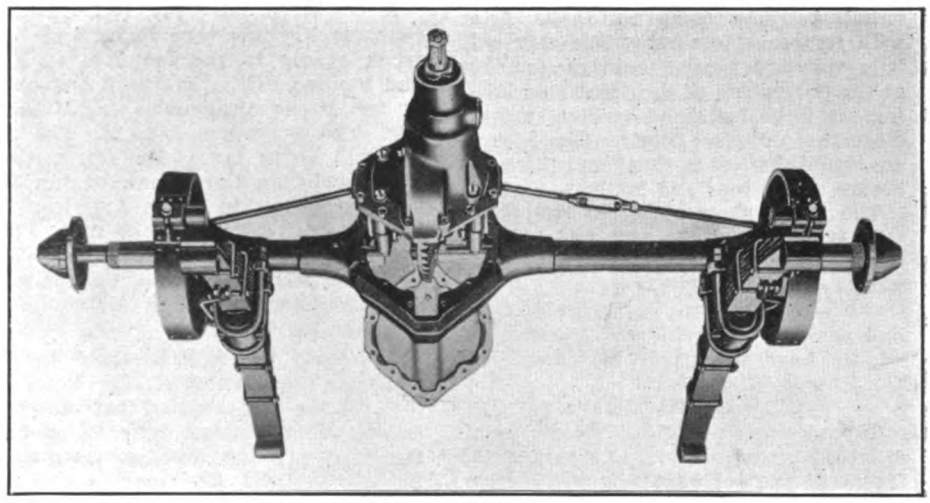
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OSHKOSH FOUR-WHEEL DRIVE TRUCK

EXCEPTIONAL efficiency is claimed for Oshkosh four-wheel driven trucks by the manufacturer, the Oshkosh Motor Truck Manufacturing Co., Oshkosh, Wis., which recently began to produce these vehicles commercially. These trucks are rated at two tons load capacity and the purpose of the company is to concentrate all its production resources on this one size. Statement is made that this vehicle will meet the demands of the greatest number of business men and that there is a more potential market for this size than any other.

The company may later on decide to construct other sizes of chassis, but if this is done the machines will be built to the design that has been standardized. The truck does not differ from conventional practise in general detail save for the power transmission, which is a type so that all four wheels are driven and each has equal traction.

Claim is made that with this construction the largest measure of economy is obtained because all of the power developed by the engine is utilized and there is no reduction because of the loss of traction through wheel slippage. The statement is made that the truck will climb an ascent of 45 degrees any reasonable distance; that it will move through mud, snow or sand that could not be driven through with a two-wheel driven machine, and with this power development there is minimum consumption of fuel because there is no loss of traction.



Rear Axle of an Oshkosh Two-Ton Truck, with Differential Gearset Removed from the Housing, to Show the Full Accessibility of the Unit.

Oshkosh Design Is Exclusive.

The design is claimed to be exclusive with Oshkosh trucks and aside from the main transmission gearset, which is a Brown-Lipe selective sliding gear construction having four forward speed ratios and reverse, the design was originated by the Oshkosh engineers. Both axles are a full-floating type, the axle housings carrying the loads, and the driving shafts can be removed without jacking the chassis.

The engine is a Herschell-Spillman four-cycle, four-cylinder, water cooled, L head type with the cylinders cast en bloc, that has cylinder bore of 3¼ inches and stroke of five inches, a heavy duty truck type that is rated by the S. A. E. formula at 16.90 horsepower, but which has developed by block test 43 horsepower. This is far greater power than would be necessary in any work, and with the four-wheel drive and positive traction there is a satisfactory excess at any engine speed. This engine is cooled by a thermo-syphon circulation of water through the cylinder jackets and the large radiator, which has cast finned top and cast bottom tanks, with a Spirex cooling section. There is also the usual fan driven by a belt to promote radiation. The water capacity of the system is exceptionally large.

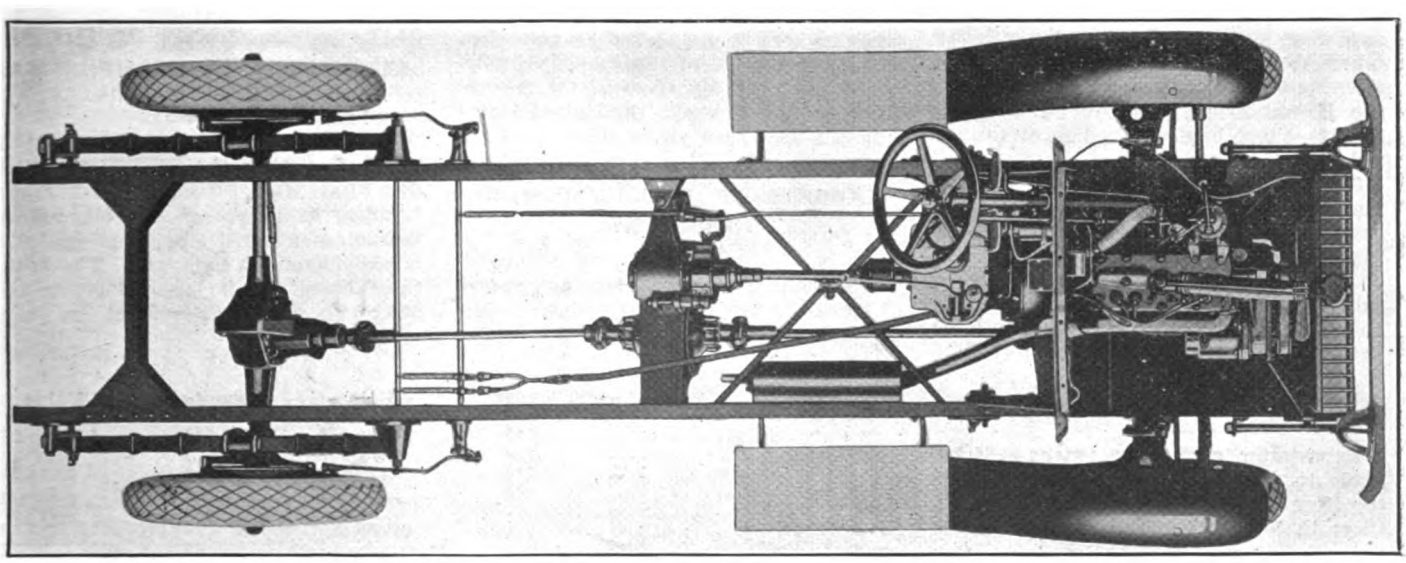
Power Transmission System.

The clutch is a Brown-Lipe dry disc that is practically self-compensating and requires but little attention, there being no reason for lubrication. The transmission gearset is a Brown-Lipe and from this a short shaft carries the power into the sub-transmission case, which is located amidships. The sub-transmission gearset is designed by Oshkosh engineers and the power is transmitted from the main shaft by a silent chain and sprockets, the larger sprocket being assembled with a differential gearset that is automatic locking.

The function of this gearset is to insure that the power is positively applied, and it will lock in the event that there is loss of traction by any one or more wheels, so that the full power is taken by the wheels having traction. With this construction there can never be a time when the machine will not have power delivered effectively, no matter what the road condition.

Equal Power to Both Axles.

From this sub-transmission gearset the power is carried by shafts of equal length to the front and rear axles, through



Plan View of an Oshkosh Two-Ton Truck Chassis, Showing the Unit Power Plant and the Sub-Transmission Gearset and the Driving System. The Unit Is Designed to Have an Unusual Degree of Flexibility.

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bevel gear differential gearsets incorporated with them. The sub-transmission equalized the transmission of power to both axles, and the conventional differential gearsets compensate the drive with reference to turns. The rear axle is a standard type of construction, but at the outer ends of the front axle housing are large balls and sockets that enclose the universal joints. The sockets are semi-spherical is shape and there are bosses at the tops and bottoms.

The wheel skein ends are ball shape with trunnions at the tops and bottoms which fit the bosses of the sockets. The weight of the load is carried on bearings that are mounted on the trunnions of the ball skeins. With this construction the wheels have the usual movement and flexibility.

Other Chassis Details.

The springs are Tuthill Titanic, semi-elliptical, and on these is mounted the frame of pressed steel channel section, strongly reinforced and gusseted. The steering gear is a Ross irreversible type and the steering column is at the left side. The wheels are wood, artillery type, with 14 two-inch diameter spokes, and these are shod with cord pneumatic truck tires. 36 by six inches, mounted on demountable rims. One extra rim is supplied with the chassis.

The source of ignition current is a battery and the fuel is supplied through a Zenith carburetor from a tank under the driver's seat. The chassis is equipped with an electric starting, lighting and ignition system.

Much care has been taken to insure accessibility and the simplicity of adjustment is a noticeable characteristic of the truck design. For instance, the main drive shafts are interchangeable. Either axle differential is interchangeable and can be adjusted by removing the cover plate of the axle housing and the chassis can remain on its wheels. Any one unit of the power transmission system may be removed without the removal of any other unit. All the bearings are standard S. A. E. sizes and these are interchangeable in the various units. The radial and end thrust bearings at the top and bottom of the steering gear are equipped with compensating adjusting nuts so lost motion can be taken up quickly and effectively. Maximum flexibility is obtained by driving by the Hotchkiss system through all four springs, there being no radius or torque rod.

The standard length of body is 180 inches and the width 72 inches, this size being recommended to insure even loading and equal distribution of the weight on the axles and tires. The chassis is sold with standard equipment, including an all-weather two-door cab with adjustable windshield and windows.

EXPORTERS OF RAINIER TRUCKS.

Exportation of Rainier trucks will be made to Australia and New Zealand by the New York Oversea Co. of New York City; in Norway by Haller, Kopsland & Co., Christiania, and in Greece by the Youroveta Hôme and Foreign Trade Co., New York City.

GMC DEALERS MAKE TOUR TO VISIT AUTO PLANTS.

A combined lake and rail excursion tour for Northwestern Buick and GMC truck agents to the factories at Flint and Pontiac, Mich., has been announced by the Pence Automobile Co., Minneapolis. The tour begins June 28. The tourists will go as far as Buffalo, reaching Minneapolis on the homeward run July 8. The steamship North American has been chartered for the lake trip. Plans for the tcur are in charge of W. R. Stephens, sales manager of the company. The excursion is similar to the one undertaken in 1916.

The party leaves Minneapolis by special train the morning of June 28 for Duluth, taking the steamer that afternoon and spending Sunday, June 29, on Lake Superior, arriving Monday morning at Bay City, Mich. The tourists will proceed by rail to Flint, Mich. Two days will be spent there, inspecting the Buick factory, but each night will be spent on the boat.

They will leave for Buffalo on the evening of July 1, spending July 3 at Buffalo and Niagara Falls, and July 4 at Cleveland. On July 5 a side trip will be taken by rail from Detroit to Pontiac, Mich., where they will witness the manufacture of GMC trucks.

The tourists will spend Sunday, July 6, at Mackinac Island. The boat will reach Chicago, July 7, and the party will return that night to Minneapolis by train. There will be 3600 miles covered by the water trip.

STEWART MOTOR CORPORATION HAS BIRTHDAY MONTH.

The Stewart Motor Corporation, Buffalo, N. Y., is celebrating its seventh birthday this month. In observance of this occasion a sales contest is being held, with a view of making this a record month. Cash prizes amounting to $5500 will be awarded to the 10 winners.

When the Stewart Motor Corporation began operations in 1912 there were 204 truck makers in the United States. Now there are only 36 of these original companies still making trucks. Of the 294 truck manufacturers in the United States only 103 are three years old.

EXPORTS OF TRUCKS FOR 10 MONTHS.

Following are figures showing exports of trucks to the principal countries during the 10 months ending April:

Exported to—	1918 Number	1918 Value	1919 Number	1919 Value
France	2,375	$8,672,069	3,356	$14,098,262
Russia in Europe	406	1,562,303	....	.....
United Kingdom	4,748	13,237,116	869	2,531,039
Canada	855	1,106,873	1,656	3,023,656
Cuba	....	.....	543	1,058,805
Russia in Asia	....	.....	16	22,000
Argentina	....	.....	49	96,363
Other countries	2,128	3,327,973	3,484	5,954,611
Total	10,512	$27,906,334	9,973	$26,784,736

NORWESCO FACTORY IN CANADA IS NOW COMPLETED.

The Northwestern Chemical Co., Marietta, O., announces that its new Canadian factory is completed. This addition to the manufacturing capacity of the well known firm is located at Ville St. Pierre, Montreal, Quebec.

F. R. Hall, general manager of the Northwestern Chemical Co., states that the new factory will be a distinctly Canadian institution, employing only Canadian labor and selling throughout the Dominion. The Norwesco products, which are already well known throughout Canada, include Se-Ment-Ol, a radiator cement; Skalex, a radiator cleaner; top dressings, shellac, valve grinding compound and other chemically correct utilities.

All of the products will be placed on the market in imperial measure containers. Jobbers and dealers will immediately recognize this big improvement over the former package which was United States standard, one-sixth smaller than the standard Canadian measure.

By making Norwesco specialties in Canada, jobbers, dealers and motorists there will save from 40 to 70 per cent. in duty. Se-Ment-Ol will sell for 75 cents in Canada, the same price as in the United States. It will be continued to be made in both powder and liquid forms.

The Canadian branch will be managed by Prescott W. Robinson, Montreal. Mr. Robinson will also have charge of sales in the eastern provinces—New Brunswick, Ontario, Quebec, Nova Scotia and Prince Edward Isle. The sales offices will be located in the Drummond building, Montreal.

E. Victor Vallance will have charge of Manitoba, Saskatchewan and Alberta sales, with offices in the Confederation Life building, Winnipeg. I. D. Cross, with offices at 77 O'Farrell street, San Francisco, will have charge of British Columbia sales.

This organization will afford thorough Norwesco distribution throughout Canada, and will be a splendid addition to its already large business.

BEGIN WORK ON CHAMPION FACTORY IN CANADA.

Work on its new Canadian plant has been started by the Champion Ignition Co., Flint, Mich. Ground was broken in Windsor in the presence of city officials, Dominion authorities and representatives of the Champion company. The cost of the factory will be approximately $250,000, with a similar amount for equipment.

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"P-T" TRUCK AND TRACTOR WHEEL

WHAT in effect is a pedal or, more properly, a platform laying wheel, is the new wheel now being produced commercially by the Wm. Wharton, Jr., Co., Easton, Pa. This unit is designed for either trucks or tractors and statement is made that it serves every requirement with surprising results.

The wheel differs in principle, although it resembles, the ped-wheels that have been used more or less experimentally in Europe. It is the invention of two Italian engineers who sought a construction that would not damage road surfaces. Claim is made that the degree of traction obtainable with this wheel, which is known as the "P-T," is greater than with any other, and to substantiate this the results of service of machines equipped with these wheels used by the Italian army during the European war are pointed out.

One of these is that loads of 50 tons were hauled by a tractor equipped with these wheels without damage to the road surfaces. Extremely steep grades and rough ground was climbed without reaching the limitations of the machine. Ice, snow, mud or soft sand or boggy ground was traversed without perceptibly reducing the traction of the tractor.

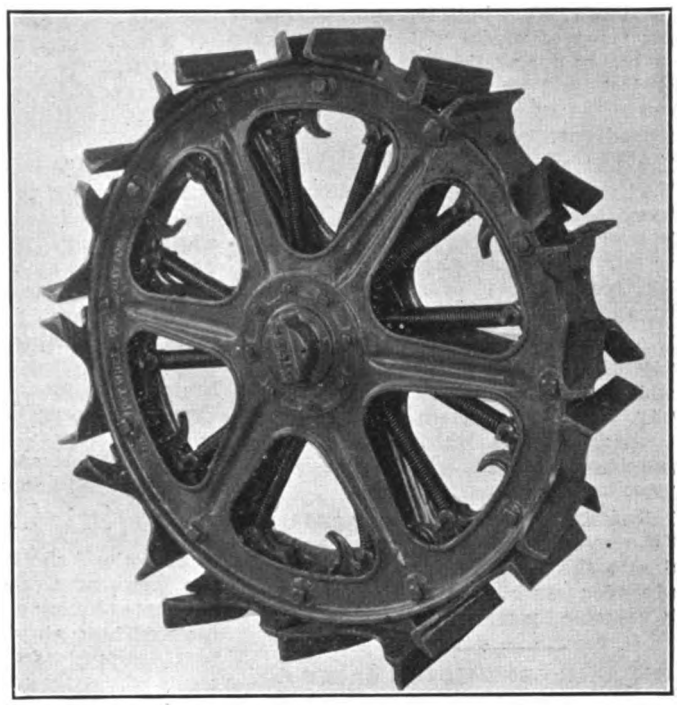
Wheel Lays Its Own Track.

The construction of the wheel, which is shown in the accompanying illustration, is such that it carries on the rim a series of pads or platforms that are successively laid as the wheel turns and form what is practically a continuous track on which the wheel revolves, much the same as the wheels of a locomotive roll along steel rails. The pads are not pivoted to the wheel rim, but held against the rim by springs which do not prevent the wheel running along the track, so that while there is no loss of power or unnecessary wear of the wheel, there is no wear of the road surface. On soft or rough ground the pads are so laid by the springs that though the surface may be irregular the track is always even in height. No matter what the surface of the ground the wheels are always on what may be likened to a rail.

The power is transmitted through the reaction created in the wheel by wide, case hardened rollers thrust against corresponding surfaces and integral with the wheel pads. These surfaces are practically profiles representing the curves described by the rollers during their movement in the wheel. There are two curves for each pad—one forward and the other for reversed movement.

There can only be a rolling movement against the pad profiles so that there is no rubbing or surface friction. There being an endless close pad track laid at all times and there being at least one roller always thrusting against a pad profile, the movement of the wheel is uniform and the transmission of power is continuous. These conditions are claimed to obtain the high efficiency. The company maintains that at low speed the tractor can develop a drawbar pull equal to its own weight, which is far greater than with any other wheel or track now built.

The Wm. Wharton, Jr., Co., which is associated with the Taylor-Wharton Iron and Steel Co. has acquired the patent rights and will build these wheels to meet any demand. The parent company has engaged in business 175 years and has made practically every class of wheel, even from those of early days, which were constructed of ends sawn from logs.



The "P-T" Pedal or Tracklaying Wheel, with Which a Drawbar Pull Equal to the Weight of the Vehicle Is Obtainable.

Though the wheel was developed for army tractors and war purposes, the manufacturer maintains that it will be equally desirable for trucks and farm tractors, and the intention is to manufacture it of the materials best adapted for the work.

BERGIE NATIONAL SPARK PLUG CO. CHANGES NAME.

Owing to the fact that the use of two names in the Bergie National Spark Plug Co. has resulted in confusion, the company has changed its corporate name to "National Spark Plug Co.," so that it will correspond with the name of its spark plug. There will, however, be no change in the officers or in the management of the company. The change is merely made to shorten the company name, obviate confusion and make it easier to remember that National Spark Plugs are made by the National Spark Plug Co., Rockford, Ill.

WILL ESTABLISH TRUCK ROUTES OUT OF GRAND RAPIDS.

The West Michigan Transit Co. has been organized with $150,000 capitalization, and will establish motor transportation truck service on routes to practically every city and town in the Grand Rapids, Mich., trade area. Prominent Grand Rapids men are interested in the company.

It is planned to put at least 25 trucks on routes out of Grand Rapids, going to Kalamazoo, Grand Haven, Muskegon, Newaygo, Allegan, Hastings, Howard City, Greenville, Belding and intermediate points.

A central freight station will be provided where shipments can be assembled and regular trips over the established routes will be made, with charge for delivery approximately the same as for rail shipments.

FISK RUBBER CO. HAS NEW PREFERRED STOCK ISSUE.

The board of directors of the Fisk Rubber Co. has decided to issue $15,000,000 new seven per cent. first preferred and $2,500,000 of seven per cent. convertible second preferred stock. The first preferred will be issued at $100 and the second at $135. With the proceeds the present first preferred and the first convertible preferred will be retired.

TRIANGLE MOTOR TRUCK CO. WILL DOUBLE PRODUCTION.

An expansion program has been launched by the Triangle Motor Truck Co., which was organized during the war, and which recently increased its capital from $100,000 to $200,000. Production has been at the rate of one truck a day, and this will be doubled within the next month. It is expected that before the end of the year production will be further increased. The company will soon erect a plant addition, 70 by 250 feet.

UNITED STATES TIRE ADVERTISES HISTORICAL PLACES.

A novel out-of-doors advertising campaign has been undertaken by the United States Tire and Rubber Co. in New England. It takes the shape of huge billboards from which the motorist gleans information of historical places ahead.

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TESTS SHOW GASOLINE SAVING ON GOOD ROADS.

A test conducted by the B. F. Goodrich Rubber Co. recently in Ohio to determine the saving in gasoline from running motor vehicles over a good road as compared with gas consumption over bad, medium grade roads, disclosed a surprising difference.

With five new army standard A trucks with seven different types of road service, there was shown a gain of six miles per gallon on fuel between the best and worst types of roads. All of the trucks were empty during the test. The trucks loaded showed that the poor roads took seven times as much gasoline a mile as the good one.

The test results disclosed an average of 5.78 miles per gallon over a dirt road in good condition, 7.19 over fair gravel, 9.39 over good gravel, about the same over fair bituminous macadam and good brick roads, 11.44 over extra smooth brick and 11.78 over good concrete.

The tests revealed that the saving to the motoring public in gasoline alone would amount to millions of dollars annually. Perhaps equal to this would be the saving in tires, which is considered as an important item of car upkeep, as is gasoline.

Calculating the saving in wear and tear on the mechanism of cars and trucks, and also the item of time lost by poor roads, adequate highways are undoubtedly a valuable investment.

FORM ARMLEDER MOTOR SALES CO. IN CLEVELAND.

The Armleder Motor Sales Co., 3223 Lorain avenue, Cleveland, has been incorporated by J. F. Gleichauf, president; John W. Reitz, vice president and manager, and Justin Gleichauf, secretary and treasurer. The company will distribute Armleder motor trucks in Cleveland and vicinity.

The deal with the company was completed by T. E. Moore, Armleder factory representative, who secured the quarters. He sold four trucks for immediate delivery as samples for the show room and a stock of repair parts worth $2500, and assisted it in closing orders for two other trucks for quick delivery.

The new company is well financed. Mr. Gleichauf is a man of considerable means, and, in addition to the capital stock paid in he stands ready to loan the company any amount necessary to conduct the business properly. The firm expects to sell and deliver 125 trucks this year.

DIVIDEND IS DECLARED BY TROPICAL RUBBER CO.

The board of directors of the Tropical Rubber Co., 51 Leonard street, New York, has declared out of the surplus earnings a semi-annual dividend of four per cent. on the outstanding capital stock, payable July 1 to stockholders of record at the close of business June 10.

Motor Transport Men Will Be Trained For Service

The men who shall enlist in the special recruiting campaign to increase the strength of the Motor Transport Corps of the United States army will have advantages for self development that may be regarded as equal to those of a high class technical school, with opportunities for obtaining commissions as officers, and at the same time receiving the benefit of practical experience that will fit them for the highest wages as industrial workers if they should desire to return to civilian life.

The object is to attract into the service men of intelligence and ambition, who will have unusual efficiency, and who will have ambition to improve themselves. To all young men the service offers exceptional possibilities for education and industrial advancement. The value of the opportunity is stated by Col. Brainard Taylor, commanding the Motor Transport Corps in the Eastern Department, as follows:

"The schools are to be held at Camp Holabird, Baltimore, Md.; Camp Jesup, Atlanta, Ga.; Camp Boyd, El Paso, Texas, and Camp Normoyle, San Antonio, Texas, where the Motor Trassport Corps has large, new, well lighted shops, with complete equipment of machinery and tools. These shops are the largest and best equipped repair shops in this country.

"In the Motor Transport Corps Schools, which will be conducted as schools only, giving both military and technical training. 68 different trades will be taught by university instructors specially engaged for this work. The schools will be open all the year and courses are to commence three times each year. They will consist of practical shop work with a minimum of class work. Students will not be permitted to change from one course to another, and they must make good in one course before taking another.

"Upon the satisfactory completion of the prescribed courses, a diploma of excellence will be given. Post-graduate courses are offered to men who make high ratings and, as a further incentive, the best of the post-graduates have the privilege of taking one year of university training. Graduates of these schools can qualify by examination for commissions in the Motor Transport Corps or for admission to the Military Academy at West Point.

"While both military and technical training are included in the school courses, students will find the routine quite different from that in other branches of the service. They will have their spare time to themselves, will receive full pay and all soldier's privileges, and will not be required to perform fatigue duty.

"Based upon prevailing prices, the pay of the enlisted student, with his clothes, food, quarters, medical and dental attention counted in, amounts to more than $100 a month in money. High standing in classes will bring promotion to non-commissioned grades and a consequent increase in pay. The Motor Transport Corps desires to enlist men possessing a good common school, trade or high school education. Men who want to learn a trade or to perfect themselves in a trade at which they are now working will find this a golden opportunity."

BIG BRITISH MOTOR COMBINE IS BEING ARRANGED.

Arrangements have been completed for an amalgamation of interests between the Armstrong-Whitworth Co. and the Siddeley-Deasy Motor Car Co., Coventry, England, but whether this will be in the nature of a complete absorption or merely a controlling interest is not yet stated. Particulars of the financial and other details are expected within a fortnight.

The Siddeley-Deasy factory covers an area of 25 acres and employs between 5000 and 6000 hands. During the war it produced the engine known as the Siddeley "Puma," which was adopted by the British Royal Air Force as the standard vertical six-cylinder water-cooled engine, and is in daily use in the air service. It is understood that the greater part of the Siddeley works is now to be devoted to the production in large quantities of a new six-cylinder motor car, to be known as the Siddeley Six.

The London Times states that the Armstrong-Whitworth Development Co. was formed primarily for the purpose of securing commercial engineering works, as distinguished from armament works, in which it had specialized particularly with a view to linking up allied concerns for reconstructional development; and the effect of the proposed combine will be to consolidate its various interests, thus enabling the Armstrong Co. to carry out the work in all branches of engineering.

WHITE TRUCKS AID IN DAILY AIR MAIL SERVICE.

In the maintenance of daily air service between Cleveland and Chicago, White motor trucks are used to dispatch mail between the postoffice and landing field. They enable a late closing of the air mail and insure the planes "hopping off" on time.

When the mail is transferred from a plane to a White truck at the Cleveland landing field, the truck rushes the mail through the business district of the city to the postoffice, four miles distant, in 15 minutes. The aerial mail service officials selected a White truck for the exacting work because of the long established record of the White for dependability.

Another White of 1½-2-tons capacity is used at the Cleveland landing field as an emergency truck to carry supplies of fuel and airplane parts to the hangar. Mail transported over the new air route is delivered within five hours after it is posted in Cleveland or Chicago.

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OHIO TRAILERS AND SEMI TRAILERS



A Special Type Ohio Trailer with Load Capacity of 10 Tons, Designed for the United States Army Service and Used with Both Trucks and Tractors.

WITH its entire factory facilities now available for commercial production the Ohio Trailer Co., Cleveland, O., has resumed its pre-war activities and is now manufacturing units of different freightage capacity. The experience of the company during the war with government contracts was of material benefit, in that developments from varying constructions have insured the manufacture of units that should be more serviceable and enduring.

The company is one of the pioneers of the trailer industry and because it was manufacturing to designs that had been service proven it was offered contracts to produce types of trailers for use in this country and abroad. In a comparatively short time practically all of the facilities of the plant were engaged with government work and the trailers were shipped abroad in large numbers. During the war the company could supply its sales agents with very small numbers of units. As many other concerns were required to do, the Ohio company practically abandoned business to serve the government.

The company, however, now has greatly increased capacity and is building to designs perfected beyond what would have resulted from normal commercial experience or the requirements for ordinary highway transportation. The units range in capacity from the 800-1000 pound trailer for use with an automobile to the 10,000 pound size hauled by truck or tractor.

Heavy Units for Army Service.

One of the accompanying illustrations shows a type built for the government in large numbers, this having 10 tons capacity and designed for hauling artillery and heavy duty tractors from the supply bases to the lines of action. These were used largely to save time, because of the comparatively slow movement of the tractors, although there was the wear of the tractors to be considered. These trailers were usually drawn by trucks and the speed was dependent upon the highway conditions, but was frequently the maximum to which the machines were governed.

Statement is made by the Ohio company that the best truck practise has been followed in building its trailers and there is a very large factor of safety for all parts. The frame is pressed steel and following approved design the ends of the side rails taper from the centers, so that there is the greatest strength where it is most needed and the chassis has greater flexibility, this insuring considerably increased life of tires. The frame is mounted as low as is possible to bring the center of gravity of the vehicle and load to the point that will minimize side sway.

Two Standard Designs.

The standard types built of the two-wheel units are models 40A and 41A, with six and eight foot bodies, which are rated at 800-1000 pounds load capacities; models 50A and 51A, with six and eight foot bodies, rated at 1250-1500 pounds load capacities, and the four-wheel reversible types, 200D, two tons capacity; 300F, three tons capacity, and 500F, five tons capacities. The two-wheel units are furnished with bodies, but the four-wheel units usually without bodies. In addition to these non-reversible and special trailers are built to order or specification.

All of the two-wheel trailers are constructed with heavy duty roller axle bearings, with a flexible spring drawbar exclusively used by the Ohio company, a frame bracket for coupling a unit if required, and a special drawhead is made for use with Ford chassis or cars.

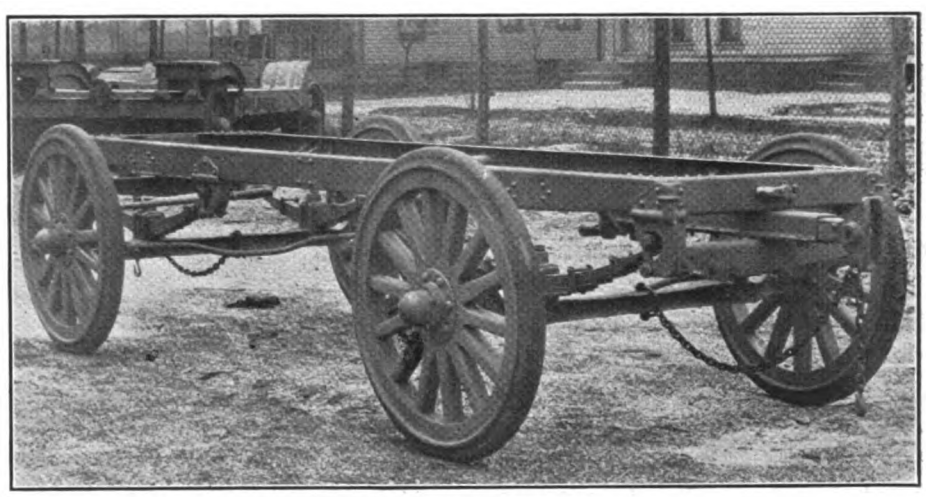
The four-wheel trailer units are constructed with heavy duty pivoted knuckle axles, these being I sections drop forged from special steel, with nickel steel knuckles. All the axle bearings are roller type, with large margin of safety. The springs are semi-elliptic and these are shackled at either end to minimize the stresses of starting and stopping. The standard wheels are wood, artillery type, each having 14 spokes, but steel wheels are provided as extra. The tires are pressed-on solid truck shoes that are rated for loads in excess of the ratings of the units.

Frames Are Specially Built.

The frames are pressed steel channel section of extra heavy steel and these are strongly reinforced and hot riveted. The frames are strengthened with tie tubes at the centers and the corners are heavily gusseted. The drawbars are heavy pressed steel that house spring buffers that absorb the shocks of starting and stopping and are maintained to be exceptionally efficient. All four-wheel trailers are equipped with steering mechanism that insures that the wheels of the trailer will follow the tracks of the towing vehicle. The units may be operated singly or in trains, and claim is made that they can be backed to any loading platform or in any alley.

Wherever practical oilless bushings are used, which precludes filling of oil and grease cups at regular intervals, but such moving parts as wheel bearings, drawbar locking device and the drawbar are packed with lubricant and while inspection should be frequent, require greasing but once or twice a year, according to the use. All wearing parts are large and the factors of safety considerably greater than with conventional practise.

The following specifications are standard of these chassis:



A Standard Ohio Trailer Chassis, This Being the Smallest Unit and Having Load Capacity of 4000 Pounds. This Unit Is Reversible.

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Model	200D	300F	500F
Capacity	2 Ton	3 Ton	5 ton
Wheelbase ...	96"	91"	90½"
Frame length.	144"	144"	144"
Frame depth..	4⅝"	5½"	6½"
Frame width.	33"	34½"	40"
Spring size...	42x2½"	46 x3"	42 x3½"
Axle beam....	2x2¾"	2¼x3"	2½x4 "
Tires	36x3½"	36 x5"	36 x6 "
Tread	56"	58"	68"

The trailer units are sold with a guarantee to be free from defects of material or workmanship and the company will replace within three months of the date of shipment to the original purchaser any defective part. This guarantee does not include the tires.

The Ohio Trailer Co. maintains a transportation department which is at the service of all who have vehicle haulage to do and the resources of this department are at the command of all who may desire special or general information.

PENNSYLVANIA RUBBER'S EXPORT MEN GO ABROAD.

D. F. Yard, sales director of the export division of the Pennsylvania Rubber Co., will sail from San Francisco about July 1 for Honolulu en route to Australia, Straits Settlements, New Zealand, China, Japan, India and South America to further the interests of the Pennsylvania Rubber Co.

R. W. Palm, South America representative, will sail July 1 for Latin America. This is Mr. Palm's second trip to South America, where the company has built up a big business and established exceptionally good agencies for Pennsylvania vacuum cup tires and the ton tested inner tubes.

The company recently opened an office in the Woolworth building, New York, for the export department, and, in the absence of Mr. Yard, F. B. Beck will be in charge.

NEW TRANSPORT TRUCK FACTORY.

The Transport Motor Truck Co., Mount Pleasant, Mich., has begun the construction of a new factory unit that will have every quality and convenience that will make for economical production. The building will have a saw-tooth roof, with brick walls, steel window sash and concrete floors. The structure will be ready for occupancy about Aug. 1, and it will be given over to vehicle manufacture, although until a new administration building shall be erected the office of the company will be located in it. The cost of the plant is placed at about $175,000.

CORPORATION FOR HANDLING SIGNAL IN NEW ENGLAND.

The Automotive Corporation, with headquarters in Boston, has been formed to handle the Signal truck in New England. The company has leased the new sales and service building at 1027-1029 Commonwealth avenue and plans to have also an additional building covering an area of 10,000 square feet, for use as a parts warehouse and special service plant.

Paris Auto Show Open To Truck and Car Manufacturers

New York, June 21.—Although there is seemingly little reason to expect that American trucks and cars can be exported to France, the management of the Fifteenth Exposition Internationale De L'Automobile du Cycle Et des Sports, to be held at the Grand Palais (Champ Elysees), Paris, Oct. 9-19, 1919, has sent application blanks to the National Automobile Chamber of Commerce and concerns of the industry in this country are at liberty to participate in this show.

Applications for exhibition must be received in Paris before July 10 and some of the important conditions that must be complied with are the following: All applicants must agree not to make exhibition either directly or indirectly between July 1, 1919, and Dec. 31, 1920, in either France or Algiers; American manufacturers exhibiting must forego the privilege of entering an American show in France if one should be organized; foreign exhibitors to be admitted on a par with French must have exhibited at three previous French shows and be from countries imposing no greater import duty than 15 per cent. prior to 1914; special space will be given to exhibitors who cannot meet these requirements; not less than 10 square meters of space can be rented; half the price must be paid when the application is made and the remainder when the application is accepted; the committee reserves the right to cancel the application, refunding the amount paid; no refund will be made on space reserved and not used; allotment of space will be made known after Aug. 15; no exhibitor can sub-let part or all of his space.

There will be 12 classes of exhibitors: Automobile and chassis complete; motor trucks and 'buses; automobile engines, etc.; automobile bodies and their parts; automobile dealers established at least six months; bicycles and motorcycles; tires and tubes; accessories and parts makers; accessories parts dealers; forges and furnace; sporting goods; automobile schools. Classes 1, 2, 3, 7, 8 and 10 include only manufacturers exhibiting their own products.

Exhibitors will have the benefit of reduced rates on French and foreign railways and steamships. Provision will be made so that the exhibits will be admitted without payment of duty. No exhibits will be accepted earlier than two days before the opening.

TRUCKS IN NEW YORK STATE MUST HAVE MIRRORS.

Motor trucks in New York state, with a capacity of one ton or more, must hereafter be equipped with mirrors so that the driver may have a view of the road behind him. This is made mandatory by the Booth bill, signed recently by Governor Smith.

DETROIT AUTO CLUB PROPOSES NEW TRAILER BILL.

A new trailer bill may be introduced in the Michigan Legislature in place of the one offered by Representative M. J. Howe. The proposed measure embodies a new method by which the maximum load for motor trucks and trailers shall be established. A schedule of maximum loads is fixed, based and computed on the width of tires and the horsepower and speed.

E. C. Dunbar, Detroit, chairman of the motor truck division of the Detroit Automobile Club, presented the bill at a meeting of the Highways Committee of the Senate and House with the members of the new Public Utilities Commission.

Frank Rogers, state highway commissioner, said he did not believe the motor truck transportation industry has developed sufficiently to necessitate regulation, and thought such legislation should be delayed two years.

William M. Smith, chairman of the Public Utilities Commission, said that the main features should be the protection of the highways and encouragement of the truck industry. Danger was seen in any attempt to fix motor transportation rates now.

Sherman T. Handy and William W. Potter agreed that too much regulation now might divert traffic to the steam and electric lines.

BIG INCREASE IS SHOWN IN EXPORTS OF AUTOMOBILES.

From 1912 to 1918 the value of automobile exports from the United States rose from $25,657,294 to $110,138,831. Shipments to Latin-America increased 708 per cent. The value of similar exports to Europe in 1916 was 10 times that of the shipments in 1912.

The highest point in this trade was reached in 1916, when shipments were worth over $120,000,000 and consisted principally of motor trucks for war uses.

Notwithstanding the restrictions imposed by the United States government during the war, exports during the fiscal year 1917 amounted to $118,377,047, in 1918 to $110,138,831, and during the first nine months of the 1919 fiscal year to $75,900,000.

SHULER AXLE CO. PLANS TO CONSTRUCT BIG PLANT.

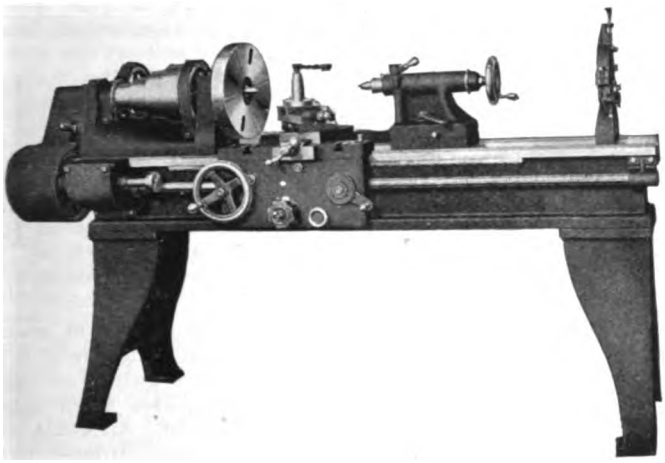
The Shuler Axle Co., Detroit, it is reported, will build a new plant second only in size to that of Timken. The company's capitalization has been increased from $200,000 to $500,000. The firm began business on a small scale a few years ago.

BROOKLYN RAINIER AGENCY.

Walter A. Scott has formed the Scott Motor Truck Co. and secured the agency for Rainier trucks in Brooklyn, N. Y. Temporary headquarters have been opened at Smith and Schermerhorn streets.

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Garage and Service Station Machinery, Tools and Equipment



CANEDY-OTTO SCREW CUTTING ENGINE LATHE.

Canedy-Otto screw cutting engine lathes, built by the Canedy-Otto Manufacturing Co., Chicago Heights, Ill., are manufactured in sizes that meet every requirement. The manufacturer claims the machines are rapid, accurate and economical. The carriages and aprons are built for maximum resistance to springs and strains. The lathes have automatic cross and longitudinal feeds, both operated from the front of apron. Both feeds are driven by a splined screw and worm so that the thread of the lead screw is used for screw cutting only, and but one feed can be engaged. With this apron one feed cannot drop in while the other feed is in operation.

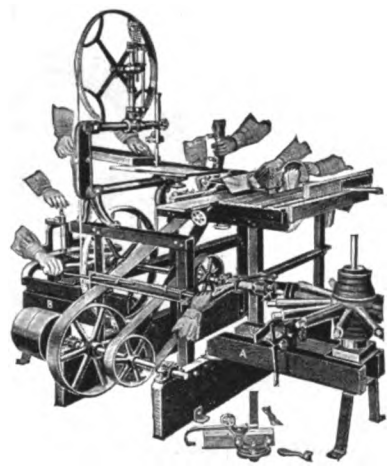
The automatic cross and longitudinal feeds can be operated only separately. The feed is independent from the screw cutting. The spindle is high carbon crucible steel accurately ground, with a bore 1 5/16 inches its entire length. The lead screw is a special quality steel cut on a master lead which insures extreme accuracy, is large diameter and has an acme standard thread. Metric thread screws may be used instead of the English lead screw if desired. Transposing gears may be supplied for cutting metric threads on English lead screws.

The thread cutting chart shows the arrangement of the gears for cutting all standard threads from four to 40, including 11½ inch pipe thread. Many other theads may be cut by compounding gears.

The feed change gear box is a quick change type, giving three changes of feed with one gear setting. The feed change is designed to combine strength with simplicity. All gears are wide faced and accurately cut. The regular equipment furnished consists of one improved double friction countershaft, large and small face plates, steady rests, follower rests, compound rests, tool post, adjustable thread gauge, change gears for screw cutting, two No. 3 Morse steel centers, adjustable stop for screw cutting, necessary wrenches and gear guards. A taper attachment can be furnished extra. This is fitted to the rear V of the lathe bed by two clamps and can be adjusted along the entire length of bed, making it possible for the operator to turn the taper in any position.

PARK'S CIRCULAR RIP AND CROSS-CUT SAW.

Service stations frequently have orders to convert wheels used with solid tires for installation of cord pneumatic shoes. A special wheel conversion tool is Park's circular rip and cross cut saw, which is equipped with a 22-inch bandsaw and six-inch jointer, besides a tilting guide, rim rounder, felloe borer and spoke tenoner, ready for instant use without

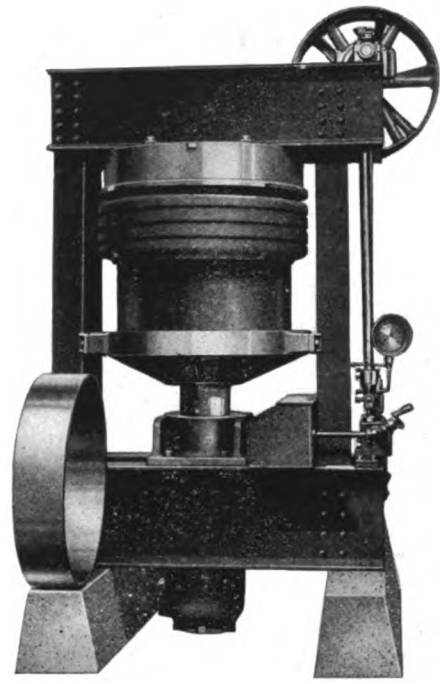


making further changes. This machine may be driven by an independent motor or by power from a line shaft.

With this machine such work as cutting down wheels, fitting felloes, turning the ends of spokes and fitting spokes and felloes on the larger size truck wheels so the wheels may be made smaller for fitting rims for cord tire casings is intensely practical. The tools are manufactured by the Park's Ball Bearing Machine Co., 4100 Fergus street, Cincinnati, O. The manufacturer states they will be sent for free trial anywhere in the United States or Canada.

SERVICE STATION TIRE PRESSES.

The Wellman-Seaver-Morgan Co., Cleveland, O., specializes the production of tire presses for mounting and demounting solid truck tires. The press consists of upper and lower plates held in a frame of I beams. The lower platen is moved by a ram working in a cylinder and actuated by a hydraulic pump. The press is equipped with a pressure gauge and relief and control valves and can be



driven either from a line shaft or by a separate motor.

To mount a tire the ram is lowered, the wheel is placed on the lower platen and the tire positioned above it. Power is then applied, either by throwing the belt on the tight pulley or starting the motor. The control valve is then closed and the tire is pressed onto the wheel.

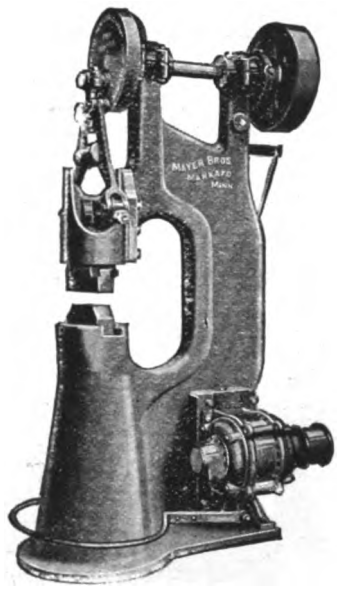
To demount a tire a ring is placed on the lower platen just large enough to clear the wheel, which is placed upon it. A second ring or a set of blocks is placed on the circumference of the wheel. The control valve is closed and the tire pressed down off the wheel.

The presses are designed to mount and demount all sizes up to the largest solid tire built, 42 by 14 inches. It is claimed that a front wheel has been removed, the old tire pressed off, a new tire installed and the wheel remounted in seven minutes. The same work has been done with rear wheels and dual tires in 45 minutes. A service department is operated by this company, which inspects the presses in use at regular intervals and records are kept of the work done.

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LITTLE GIANT POWER HAMMER.

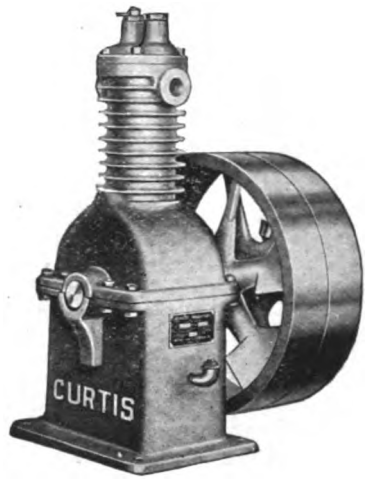
Little Giant power hammers, built by the Little Giant Co., Mankato, Minn., are new to the automobile and truck industry. They are adopted for garages, service stations and shops. With such a tool a very large range of productive work may be done that would otherwise be diverted to others. The hammers are made of the best materials and are guaranteed by the manufacturer for the life of the machines against defective material or workmanship, to the extent of replacing parts f. o. b. Mankato, Minn., free of charge when old parts are returned for inspection. The manufacturer claims that records kept show the average annual upkeep of Little Giant power hammers is less than two-fifths of one per cent. of the original cost of the machines to the owners.



The Little Giant power hammer may be equipped with motor at extra cost, dependent upon the size of motor required, or for line shaft drive. In ordering the motor the purchaser should specify whether for alternating or direct current. Little Giant power presses are built in sizes for work rated as 25, 50, 100, 250 and 500 pounds. The estimated horsepower required is ¾, 1½, 2½, 4 and 7½, and the motor horsepower required is 1, 2, 3, 5 and 7½ respectively. The motor equipment is installed to the base of the hammer and the two are a unit, the connection being by belt to the pulley of the hammer.

CURTIS AIR COMPRESSORS.

These compressors are manufactured by the Curtis Pneumatic Machinery Co., 1621 Kleinlen avenue, St. Louis, Mo. They can be adapted to any type of power, either electric motor or gasoline engine, and driven by belt either from a line shaft or by direct drive. Curtis Air Compressors for garages and service stations are claimed to have exclusive qualities of unquestioned merit and are guaranteed by the manufacturer, who has manufactured pneumatic machinery for over 25 years, to furnish a continuous supply of cool, pure, clean air, free from oil. In Curtis compressors the oil leakage into the cylinder has been overcome by a patented control splash oil system which



regulates the oil supply, permitting only enough oil to reach the cylinder to lubricate it without leaving any excess that can be carried into the discharge line. It is claimed that the compressor will run on one-tenth the volume of oil ordinarily required by a splash oil compressor. Handled through the jobbing trade exclusively.

CINCINNATI PORTABLE DRILLS.

Manufactured by the Cincinnati Electrical Tool Co., Cincinnati, O.

The Cincinnati Portable Electrical Hand or Breast Drill is made in ¼, ⅜ and ½-inch capacities. The drills are wound for alternating current, direct current and a universal type for use with either direct or alternating current.



In direct current the standard tools are wound for 110 and 220 volts, but they are also wound for from 50 to 600 volts if required. The motor windings are fully enclosed, dirt and dust proof and all working parts are protected.

A fan mounted on the armature shaft forces a strong current of air through the ventilation holes of the motor housing and the end cap. The armature is made of the highest grade of electrical sheet steel. It is wound with special magnet wire, thoroughly insulated, to prevent short-circuiting or grounding. The field coils are form wound and are the highest grade of magnet wire, carefully taped, baked and insulated. The commutator is made of segments of hard drawn bar copper, insulated throughout with the best grade of amber mica.

The gears are made special high grade steel, heat treated and hardened, insuring durability and long life. They run in grease and are fully enclosed in the gear case at the chuck end of the motor. An aluminum plate separates the gear case from the motor housing, preventing oil and grease from getting into the motor windings. High grade annular ball bearings are used on both ends of the armature shaft. The chuck spindle is fitted with ball thrust bearing, reducing the friction load to a minimum.

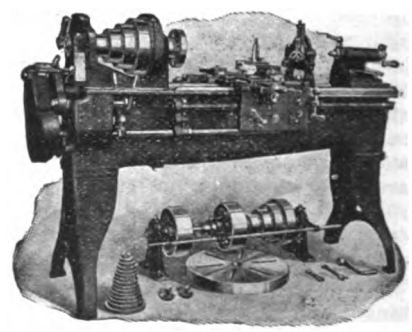
The switch is entirely enclosed in a pocket on the side of the motor housing. It is the company's special design, patented and is operated through one of the side handles of the drill. Drills of ½, ¾ and ⅞-inch capacities are made in single and two speeds.

The side handles are made of seamless steel tubing, knurled to give a firm grip. One operates the switch and the other handle is detachable when close corner drilling is desired. All drills are sent out well lubricated. Grease cups are provided for the spindle bearings.

The motor cap at the handle or screw feed end of the drills contains no electrical connections or mechanical parts, and is made so as to relieve the armature and bearings of all friction load and pressure. This is accomplished by fitting the cap over the special designed combination brush holder and ball bearing support. All electrical connections are made from the brush holder, which also supports one end of the armature spindle.

BARNES SLIDING GAP LATHE.

A lathe is a necessity in the repair shop. There is hardly a day but what it can be used. In a year the work done will go far towards paying the cost and keeping the work in the shop instead of sending it outside. A general utility lathe is the Sliding Gap Lathe manufactured by the Barnes Drill Co., 814-30 Chestnut street, Rockford, Ill.



The maker claims that the Sliding Extension Gap Lathe will do a wide range of work. It is fitted with six quickly changed gear feeds and an extra large spindle. All gears are covered with safety guards. The bed of the lathe is well braced and accurately proportioned throughout. The top sliding bed and main bed are planed full length and fitted together with dovetail construction. A screw and crank at one end draws the bed back to widen the gap between the centers. Fair deliveries are guaranteed.

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(Continued from Page 261.)

following military articles to the United States government: Packard, Liberty airplane engines; Pierce-Arrow, Hispano-Suiza airplane engines; Dodge, 155 MM gun recoil mechanism; Paige-Detroit, depth bombs; Studebaker, 155 MM shells, mine anchors; Maxwell, military tractors, tanks; Reo, military tractors, tanks; Ford, Eagle boats, airplane engines; National, bayonets, F. W. D. trucks; Goodyear, balloons; Studebaker, escort wagons; McFarlan, ammunition chests; Anderson, ambulance bodies; Brewster, airplanes; Chandler, tractors; Cunningham, balloon winders; Jackson, 75 MM shells; King, kitchen trailers and armored cars; Moon, naval gun mounts; Willys, airplane motors, gun carriages.

Value of Car Transportation.

There are 5,000,000 passenger cars in regular use in the United States. This indicates that at an average mileage of 3000, which is low, the total mileage equals 15,000,000,000 miles per annum, which, multiplied by an average of three passengers, means that the total passenger mileage is 45,000,000,000. The passenger mileage of automobiles exceeds that of the railroads by more than 10,000,000,000 miles. Automobiles, on a basis of 300 days of use and an average of only two passengers, carried 3,000,000,000 persons, compared with the railroads' total of 1915, the latest figures available, of 976,303,602. The value of automobile transportation at the railroad rate of two cents per mile would have been $900,000,000.

The seating capacity of the 5,000,000 automobiles in use in the United States is not less than 25,000,000 persons. The total seating capacity of railroad cars, of which there are 55,705, is about 3,500,000 persons. To carry the persons, now carried by automobiles, an equal distance, would require 60,000 new passenger cars, at a cost of $660,000,000, 14,972 locomotives at a cost of $524,000,000, and duplication of passenger tracks, depots and employees at an expense impossible to calculate.

Under the caption, "The Automobile Could Have Done This for the Army," the following is stated: "The carrying capacity of our automobiles is 25 000,000 persons. Traveling at an average of 100 miles per day and assuming that an army of 1,000,000 men had been mobilized on Oct. 1, our automobiles could, between that date and the end of May, have carried every man in the army 600,000 miles. If automobiles had been used instead of the railroads, they could have carried all of our men to the camps, and thence, as required, could carry all of the men in the contending armies in Europe from Paris to Berlin in 48 hours."

Foreign Trade in Trucks and Cars.

The following is given under the heading of "General Export Information:"

Number of automobiles and trucks exported during years from 1907 to 1918	364,075
Valuation of above (wholesale)	$437,468,693
Number of trucks exported in six years from 1913 to 1918	65,215
Valuation of above (wholesale)	$173,082,943
Per cent. of passenger automobiles produced in 1918 exported, exclusive of A. E. F. shipments	4%
Per cent. of passenger automobiles produced in 1914 exported	4.4%
Per cent. of trucks produced in 1918 exported, exclusive of A. E. F. shipments	4%
Per cent. of trucks produced in 1917 and 1918 shipped to A. E. F.	15.2%
Per cent. of trucks produced in 1914 exported	3%
Duty on foreign automobiles imported into the United States, complete vehicles valued at $2000 or more	45% ad valorem
Duty on complete vehicles costing less than $2000	30% ad valorem
Duty on all chassis and finished parts, not including tires	30% ad valorem
Duty on all automobile bodies imported separately	45% ad valorem

The Automotive Dealer Trade.

The following statistics of the automobile dealers' business are given:

		Average per Dealer
Total capital invested	$76,721,623	$19,000
Employees, male, 27,719; female, 2421	30,140	7½
Salaries and wages paid during year ended June 30, 1915	$22,906,024	$5,750
Rent paid per year	$4,016,748	$1,004
Cost of new buildings and improvements during year ended June 30, 1915	$5,176,445	$1,294
Paid for materials and supplies for resale during the year ended June 30, 1915	$56,391,687	$14,000
Taxes, insurance, light, power, etc., during year	$50,257,727	$12,500

AHLBERG BEARING CO. MOVES INTO NEW FACTORY.

The Ahlberg Bearing Co., which specializes regrinding worn ball bearings for replacement purposes for motor trucks, passenger cars and machinery, recently moved into a new factory at 317-327 East 29th street, Chicago.

There are numerous interesting aspects of this particular industry. One of these is the exchange system. Throughout the country the company has a chain of branches, located in 17 cities, which have complete stocks of reground and new bearings.

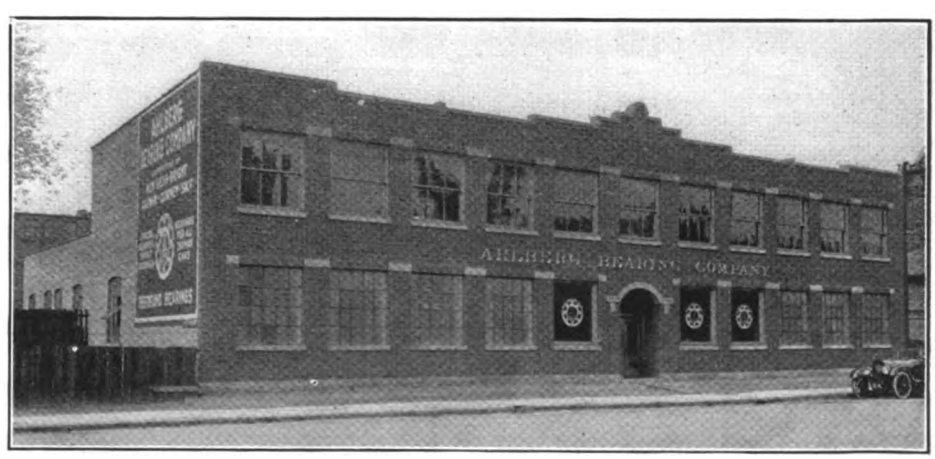
A customer desiring a reground bearing for replacement may take the worn unit from his truck or car and at the nearest Ahlberg factory office exchange it immediately for a reground bearing of the same make and type. No additional charge is made for this exchange service, it being maintained for the customer's benefit.

During the 10 years of its existence the company has accumulated a stock of all sizes and types of bearings, many of which are now obsolete. If a customer has a bearing of obsolete type he can usually have it exchanged at one of the Ahlberg branches without delay, whereas if he tried to secure a new one from the original manufacturer he could not procure it.

At each factory branch there is a service man who has been through a school maintained at the factory, who is able to give customers information of their replacement problems and of new special bearings. Each of these service men have been trained in a course which covers at least a month of full eight-hour days. He first works at what is called the disassembling bench. At this he tears down worn bearings until he is thoroughly familiar with all different types and sizes and the defects of each type and size.

He next works in the grinding room, where he observes the methods of the grinders. He is not permitted to do actual grinding work, as this would interrupt production and might lower the quality which is carefully maintained in the grinding room. From observing the grinders he learns what is necessary to make a perfectly true raceway. He next observes the inspectors and from experience learns the methods of inspection. He is next turned over to the assemblers, who instruct him in the methods of assembling the various types of ball bearings.

Following this and some other steps taken in between he works in the Chicago service department for approximately two weeks. This experience makes him thoroughly capable of giving truck owners or fleet owners the best possible advice obtainable on short notice.



The New Factory Building of the Ahlberg Bearing Co., Chicago, Which Is Operated with 17 Branches in Different Cities of the Country.

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"MOTOR TRUCKS OF AMERICA."

What is specified as a "supplement to the 1918 edition" of "Motor Trucks of America" has been issued by the B. F. Goodrich Rubber Co., Akron, O., and is a continuation of the series of hand books published by this concern for the past six years. Statement is made that because of war conditions the company considered suspending issuance of this year's edition, but the demand was such it is published in somewhat abridged form. This is done by presenting only the specifications of new productions and specifying that those unchanged will be found in the 1918 edition. The book has 64 pages and the specifications of 125 different makes of trucks are presented or referred to. The index is complete and in addition there is a very comprehensive paper on pneumatic tires for truck use by B. B. Bachman, which was originally presented before the Society of Automotive Engineers.

BIG TRUCK DEMONSTRATION AT WASHINGTON.

Following the example of Detroit and St. Louis and other cities there is to be a demonstration by organizations of truck dealers and truck owners in Washington on June 28. Unusual interest is expected from the fact that trucks operated by the various governmental departments are to participate in the big parade through the city and suburbs, and if the plans of the promoters are realized there will be hundreds of trucks in line, many of them loaded, practically all of them decorated, and all suggesting to the spectators the practical economy of power vehicle transportation.

CONSTRUCTION COMPANY MOTORIZES ITS EQUIPMENT.

The Wolverine Construction Co., Kalazoo, Mich., will motorize its entire equipment. Two Kalamazoo 3½-ton dump trucks have been purchased and others will be ordered later. The company specializes in road building.

LARGE CAPITAL INCREASE.

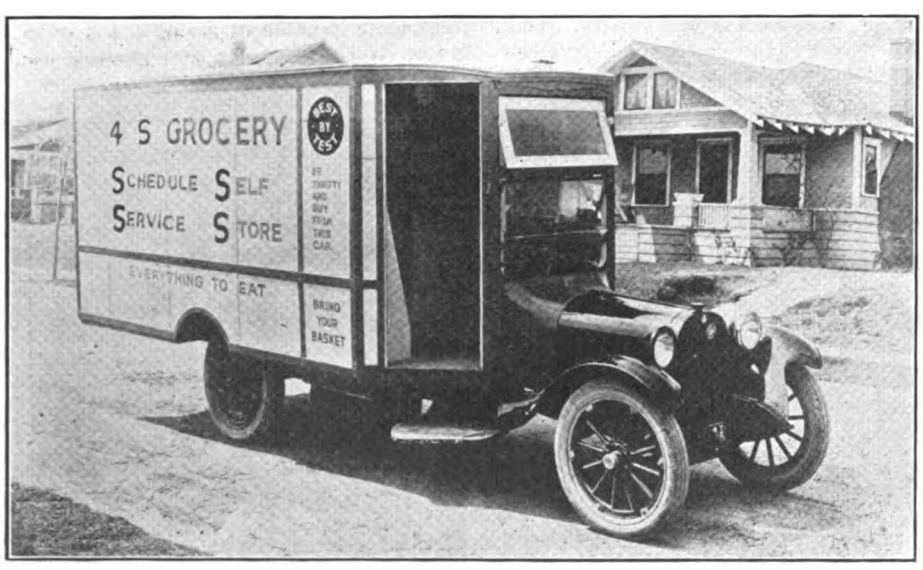
The capital of the Root & Van Dervoort Engineering Co., East Moline, Ill., manufacturer of R & V stationary engines, R & V automobile and tractor engines and Moline-Knight automobiles, has been increased from $1,346,200 to $7,500,000, of which $2,500,000 is common and $5,000,000 eight per cent. preferred stock. The present outstanding seven per cent. preferred stock will be retired. The additional capital is needed for business expansion. There will be no change of control.

The concern was established in 1898 in Champaign, Ill., and was moved to East Moline in 1901. W. H. Van Dervoort is president and general manager, O. J. Root is vice president and assistant general manager, and Rufus Walker, Jr., is vice president, secretary and treasurer. In preparation for expansion the company recently acquired a tract of 61 acres of land adjacent to its plant.

COMMERCE TRUCK PLANT FIRE DAMAGED.

Fire destroyed the paint shop and wood working department at the plant of the Commerce Motor Car Co., Detroit, Mich., recently, this being known as building No. 3. The building was wood and the oldest of the works group. The loss included 14 finished chassis in the paint shop. Directly the fire was under control the executive committee and architects conferred and practically decided on a new structure, which will be the latest type of plant construction, and plans were made so that the production should not be retarded. The facilities of the works, which were expanded to undertake government war contracts, are adequate for all requirements.

F. G. Echols, for many years general manager for the small tools department of the Pratt & Whitney Co., Hartford, Conn., has been made vice president of the Greenfield Tap and Die Corporation, Greenfield, Mass.



A Novel Idea That Has Found High Favor in Texas—A Motor Truck Grocery Store Where Customers Serve Themselves from a Stock That Is Always Fresh and Clean.

FULLER & SONS MFG. CO. LARGELY INCREASE BUSINESS.

Statement is made by Fuller & Sons Manufacturing Co., Kalamazoo, Mich., that its shipments of products for the first five months of this year exceed by 66 2/3 per cent. the shipments made during the corresponding period of 1918. A great demand exists for the new four-speed type GU transmission gearset for unit mounting for two and 3½-ton chassis. Delivery is just beginning of models LTU-4 and LTU-5 for unit mounting and LT for amidship mounting. These gearsets have a four to one low gear ratio, which is a reduction much desired for truck construction; have three forward speed ratios and reverse, and are fitted for pumps for inflating pneumatic tires and power take-off installations. They are regarded as the greatest advance in transmission gearset design.

CHANGE IN PAIGE ORGANIZATION.

Frederick L. Jewett was elected first vice president at a recent meeting of the directors of the Paige-Detroit Motor Car Co. and the following appointments were announced by President Harry M. Jewett: W. A. Wheeler, vice president, manufacturing division; Henry Krohn, vice president, sales, passenger car division; Charles S. Pike, vice president, sales, truck division; Thomas Bradley, vice president, purchasing division; Andrew Bachle, vice president, engineering division; G. C. Mather, chief engineer; J. V. Quinlan, production manager; George Peterson, general superintendent; C. B. Gaunt, sales manager, passenger car division; Frank E. Caulk, sales manager, truck division.

NEW SANFORD TRUCK AGENCIES.

The Sanford Motor Truck Co., Syracuse, N. Y., has made agency contracts with the following: Northside Hoisting Co., Bronx, N. Y.; Fayette Motors Co., Fayette, Ala.; Escambia Sales Co., Atmore, Ala.; William Penn Auto Co., Altoona, Pa.; C. L. Kerr, Geneva, N. Y.; C. E. Phillyss, Washington, D. C.; Beverly Garage, Staunton, Va.; A. A. Williams, Evergreen, Ala.; H. H. Cornick, Binghamton, N Y.; James Pritchard & Sons, Ithaca, N. Y.

ACME TRUCK PRICES INCREASED.

The Acme Motor Truck Co., Cadillac, Mich., has announced an increase of $100 in the prices of the model C 3½-ton and the model E five-ton trucks, to be effective July 1. The use of a heat treated pressed steel frame and a Continental model E7 engine with flywheel enclosed necessitated an advance in the model C, and the model E was repriced on an actual cost basis.

C. E. Wilson, formerly of the Westinghouse Electric and Manufacturing Co., has been appointed manager of the motor equipment division of the Remy Electric Co. and will direct the engineering and sales departments at Detroit and the works at Anderson, Ind.

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NEW FRUEHAUF TRAILER UNIT

THAT is a very recent development in trailer construction is now being produced by the Fruehauf Trailer Co., Detroit, and which is known as the new Fruehauf reversible four-wheeled trailer. This haulage unit is built to a design that is claimed to have met all requirements for trailer service and this has been possible by the adoption of two of the oldest principles for construction of heavy haulage vehicles, such as freight and street cars.

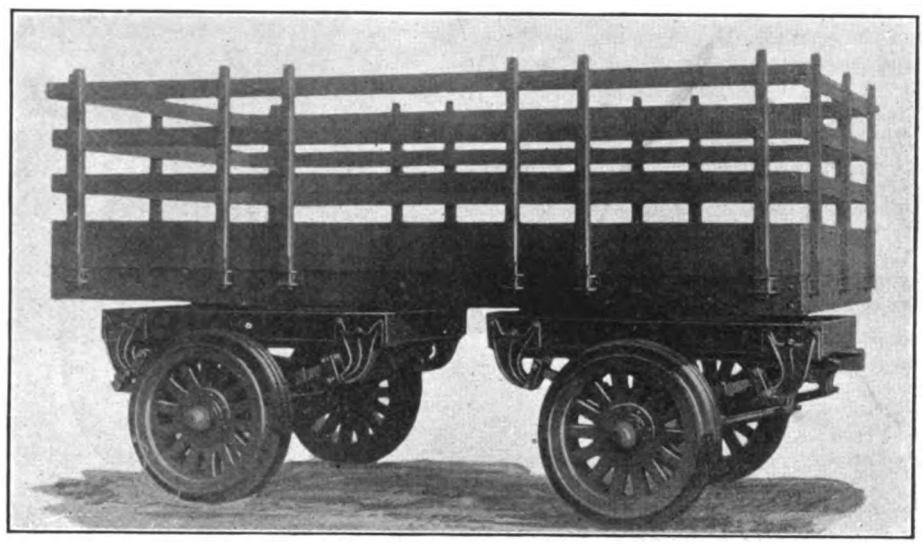
The one of these is the use of double trucks—that is, two identical but independent and reversible sets of running gear for carrying the frame of the chassis. This is the application to a trailer of railroad or street car construction, and which is the vogue with practically all types of heavy haulage vehicles that are drawn, for it is not applicable to units that are self-propelled. The other radical departure from other trailer designs is the utilization of the circle-steer principle, which is also impracticable with self-propelled machines.

Statement is made that with this construction and other simplifications, and making the units heavier and more enduring, the trailers track perfectly and there is no possibility of the trailer "snaking" and causing excessive stresses upon the truck or tractor and the power plant. The Fruehauf company claims that in this trailer what is practically perfect control in towing has been obtained, and this result means that operating costs are minimized.

Frame Is Wholly Independent.

With the use of the two-wheel units the frame is independent as compared with other constructions, a condition that makes for superior suspension. The frame of the trailer is the foundation for the body, and with two sets of springs alike the load is carried so that all the shocks are fully absorbed by them. The springs are semi-elliptical and the assembly is such that the load can be equally distributed.

The springs are entirely free from the stresses of hauling the trailer and load, for the unit is drawn by or through the dead axle of the forward wheel unit, which is a heavy rectangular member. The thrust is taken by radius rods, so that the springs are perfectly free, and the wheel units are designed to have the springs spaced approximately 11 inches further apart than is customary in truck or trailer practise, this insuring greater resiliency and absorption. Not only this, the axles with the springs so located will carry about 1000 pounds more weight with the same factor of safety.



New Fruehauf Four-Wheel Reversible Trailer Unit Having Two Independent and Identical Trucks or Wheels and Circle Steer.

In other words, the springs are so much nearer the ends of the axles that the load stresses are better supported by the wheels and there cannot be the same degree of side sway that is realized with the springs closer together. Not only this, the load can be better equalized or distributed, so that, if placed on the platform with reasonable care there will be minimum stresses no matter what the road condition.

Frame the Body Foundation.

The frame is constructed to be an ideal foundation for any type of body, for the floor can be built flush with the top of the pressed steel channel section frame, which greatly increases its strength and rigidity. Claim is made by the Fruehauf company that with this frame design the owner can have the ordinary type of stake and rack platform body built at about one-fifth of the customary cost of such bodies, which is a substantial saving in the total investment.

As the wheel units are alike in every respect the trailer can be drawn in either direction equally as well. The trailers are constructed to the Fruehauf standard for material and workmanship, and they are equipped with drawbars with which coupling may be done quickly and easily. The accompanying illustration shows one of the heavy trailers equipped with a conventional platform body with stake and rack sides and end gates, but obviously the manner of installing all bodies is practically the same. The company is producing these units in different sizes and with whatever body equipment is desired by the purchaser.

PUBLIC HEALTH WORK DEPENDED ON GOOD ROADS.

"Much of the development of public health work, visiting nursing and medical service generally in the rural communities depends upon the development of good roads," states the May issue of Modern Medicine. "The inadequate supply of physicians in the country is not due to the superior health of the people; there is just as much work needing to be done by the physician in rural as in urban sections. The reason is rather to be found in lack of means of getting around the country without extreme hardships."

The magazine states that 40 per cent. of all the babies that die in their first year in the cities die within 30 days after birth, while the corresponding figure for the country districts is 47 per cent.

"No better index," states the article, "of medical care could be given than these facts. They tell the story that nearly every one knows, viz: That adequate medical care is not available for the rural mothers and babies."

SHIP BY TRUCK MOVEMENT GAINS IN NEW ENGLAND.

The "Ship by Truck" movement in New England has gained great impetus. Numerous Boston firms blazed the trail. One of the largest Hub grocers had occasion to transport two containers from Baltimore to Boston, and truck transportation was the only way in which early and efficient delivery was assured. The same concern also operated a motor truck line of its own between Boston and a western city, much to the satisfaction of its customers and a considerable saving of money.

Still another concern established a line between Boston and Worcester, Boston and Portland and Boston and Providence, and one of the largest companies in New England maintained a special motor truck express of its own between Boston and New York. Truck express lines were also established between Boston and New York, with stops at Providence and other important cities.

BRITISH TO SELL ARMY TRUCKS BY AUCTION.

According to London daily papers the intention of the government is to dispose of the surplus of trucks used for the army by auction, and the total of the machines to be sold will probably exceed 30,000. The plan of sale has not been made known, but large prices were obtained for 300 motorcycles at an auction at Royal Agricultural Hall, Islington. Most of these were used machines, but some were new and uncrated.

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New Motor Truck Accessories and Supplies

STANDARD FUEL SAVER AND DECARBONIZER.

Manufactured by the Motor Fuel Saver Corporation, 50 Church street, New York City.

This equipment can be installed on any vehicle in a very short time. Its main unit is an atomizer from which a pipe connection leads to the intake manifold of the engine. The movement of the engine causes a vacuum which actuates the atomizing diaphragms.

The atomizer produces finely divided water vapor that is drawn with the fuel into the intake manifold of the engine and thence into the cylinders. The maker claims that owing to a much richer volume of oxygen in the fuel mixture the gas burns completely and leaves no carbon, and there is more power developed with less gasoline consumption.

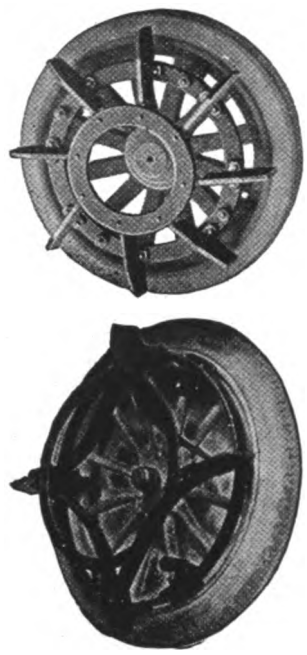


The vapor introduced into the cylinders with the fuel is converted into superheated steam. This breaks up the carbon, which is ejected through the exhaust pipe. This decarbonizer is adapted to trucks and tractors because of its heavy construction.

AMERICAN TRACTION RINGS.

Manufactured by the American Tractor Ring Co., Inc., White Plains, N. Y.

This device is claimed to insure traction for trucks in mud, snow, ice or on soft surfaces. It is simple in construction, positive in results and economical in price. The ring is fastened to the outside of each driving wheel. To each ring is attached eight blades. These blades are set at an angle of 15 degrees so that they become operative below the horizontal hub line. The blades are also fastened to an outside guard ring, the complete equipment being attached by bolts fastened to a ring on the inside of the wheel. The maker claims that the blades do not contact with hard road surfaces, and only when the wheels sink into snow, ice, sand, soil or mud do they

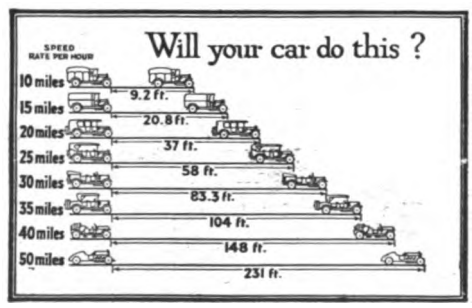


have traction. Even though a truck should become deeply mired, a plank, rail or heavy chain placed under the blades will give the traction necessary to lift the truck to a firm surface. The device is liberally guaranteed.

THERMOID HYDRAULIC COMPRESSED BRAKE LINING.

Manufactured by the Thermoid Rubber Co., Trenton, N. J.

A good brake lining is an absolute necessity, for on good brakes depends the safety of the truck. The maker claims that in every square inch of Thermoid Brake Lining there is 40 per cent.

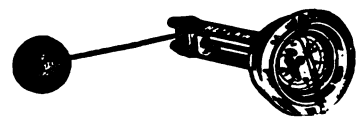


more material than in ordinary brake lining. This additional body gives a closer texture, which is made tight and compact by hydraulic compression of 2000 pounds. In addition, Thermoid is "grapnalized," an exclusive process in manufacture, so that it will resist moisture, oil and gasoline. The engineers of over 47 different cars and trucks have standardized on Thermoid Hydraulic Compressed Brake Lining.

RETLAW FORD CAR GAUGE.

Manufactured by the Retlaw Manufacturing Co., 812 Woodbridge street, East Detroit, Mich.

A gauge that indicates the volume of gasoline in the tank of a truck is a time saving equipment, for it not only gives replenishing, but also shows the consumption, which is desirable for record. The Retlaw gasoline gauge, although de-



signed primarily for use on Ford machines, can be used on practically any truck not equipped with a gauge. This gauge consists of a float mechanism suitably linked to a dial upon which is plainly marked a scale in gallon units. It may be very easily and quickly installed, taking the place of the regular filler cap.

VICTOR SPARK PLUG.

Manufactured by the Victor Spark Plug Co., 250 Devonshire street, Boston, Mass.

"The main point of difference between this and other plugs," says the maker, "is that we employ an external ignition chamber, and do not place our spark gap in the cylinder where it is fouled by oil and dirt and eventually becomes short circuited by soot and carbon."

The plug can be adjusted by taking out the sight plug and using a screw driver



on the adjusting screw while the engine is running without removing the plug from the cylinder. By the priming cup on top of the plug gasoline can be

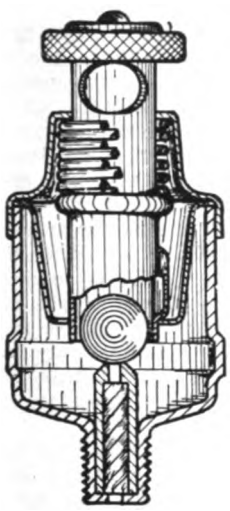
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dropped directly on the spark gap. This priming device is of unusual interest to Ford owners. This type of plug is particularly recommended to tractor owners where kerosene is used as a fuel, or for motor boats, airplanes and stationary engines.

THE CONSOL AUTOMATIC OILER.

Manufactured by the Consolidated Machine Co., Detroit, Mich.

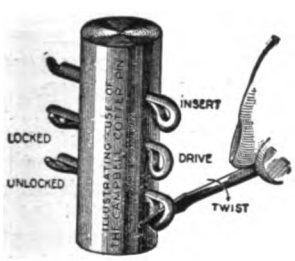
This oiler is automatic in operation and dirt proof and has many distinct features, fully protected by patents, not heretofore used in any oiler. It is neatly made in several styles and finishes.



It prevents leakage of oil onto the bearings when the vehicle is not in motion, for vibrations are necessary to move a ball valve which automatically controls the flow of oil from the cup. Several manufacturers have ordered these oilers. The company is starting production on a large scale.

CAMPBELL HAMMERLOCK SELF-SPREADING COTTER PIN.

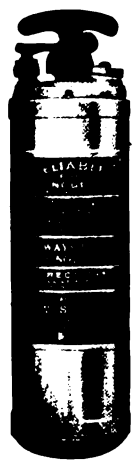
The manufacturer of Campbell Hammerlock self-spreading cotter pins claims them far superior to other type pins in that they may be driven by a hammer into inaccessible places and that the points of the pins, owing to their construction, spread as driven. The pins are particularly adapted for quick work on automobiles, trucks and tractors. To



place them drive with a hammer until the points are equal length. This will partially flatten the eye and force the shorter or straight branch forward so that its end will ride up over the unturned point of the other limb, thus automatically spreading as well as locking the pin into place. To remove, use the point of a screw driver, the tang of a file, or a regular cotter pin extractor, in the eye, and with a twisting motion return the short shank to its original position. Then remove the pin with the fingers. The Campbell Hammerlock Pin may also be used as the ordinary pin and when so used it is easier to spread than the ordinary pin and can be as easily withdrawn.

RELIABLE FIRE EXTINGUISHER.

Manufactured by J. W. Stevens, Rosebank, N. Y., and distributed by Charles



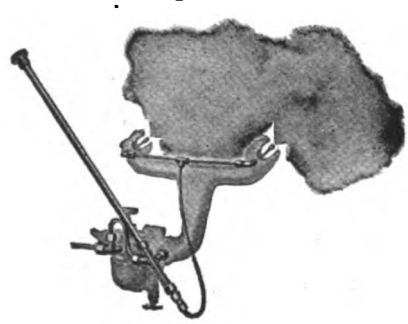
D. Durkee & Co., 2 and 3 South street, New York.

Every repair shop should have fire protection for emergencies. The Reliable Fire Extinguisher is a hand portable type that can be hung on a wall. It is simple in construction and operation and is a non-conductor. The maker asserts that it will not explode or corrode and will throw a stream 30 feet. Its adaptability makes it efficient for extinguishing acetylene, electrical, gasoline, naphtha, oils and varnish fires in either private homes, factories, stores, warehouses, trucks, automobiles, tractors or motor boats. The extinguishers are made of hard brass in four sizes.

LIBERTY STARTING PRIMER.

Manufactured and distributed by the Liberty Primer Co., Inc., 676 Woodward avenue, Detroit, Mich.

Liberty Starting Primer may be installed on any Ford vehicle, truck or tractor. It is guaranteed to turn over the engine by combustion in each cylinder in rotation on the first turn by hand crank or by any starter at any temperature to 20 degrees below zero. It is

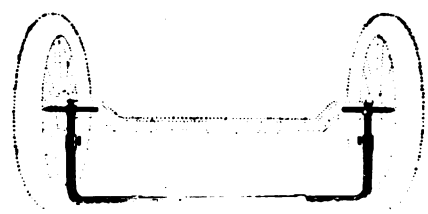


a fuel and battery saver, as it obviates running the engine unnecessarily. It saves the battery from extra starting work. The primer also prevents the engine stalling when on a grade. Vaporization is produced by a quick thrust on a push button on the dash. This operates a high pressure force pump, throwing the fuel, gasoline, kerosene or distillate, through a patented atomizing nozzle with such force that the manifold and ports are filled with suspended vaporized molecules of fuel or highest combustibility. In ordering, if car is not equipped with a regular standard Ford carburetor or manifold, it will be necessary to specify the name of the carburetor and manifold.

TRUCK RUNNING GEAR ALIGNER.

The Mechanical Utilities Corporation, 5 North La Salle street, Chicago, Ill., is now manufacturing a wheel aligner for automobiles and trucks for which strong claims are made. It consists of a one-inch steel tubing, malleable iron castings, with plungers and pointers of steel, nickel plated; a graduated scale, etched on brass and inlaid with silver, with figures in white on a black background.

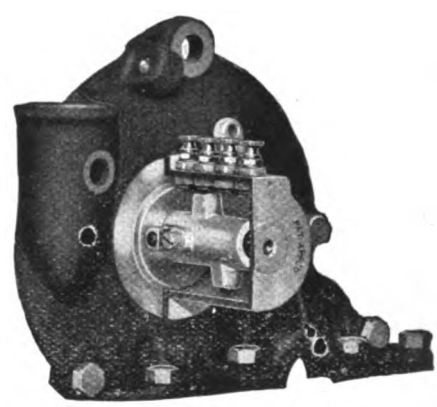
When in use the two center brackets rest on the floor or ground, the pointers being placed at the centers of the tires



at the front. With this adjustment made the stand is placed at the back of the wheels and the position of the pointers noted. Any difference shown by the scale will indicate the variance of alignment, and by adjusting the tie rod any change may be made.

JACK RABBIT COMMUTATOR.

The Jack Rabbit Ignition Co., 1062 Palmer avenue, Detroit, Mich., is manufacturing a new timer for Ford trucks and pleasure cars that is designed to



take the place of the regular Ford timer, being installed without any alterations to the engine, except possibly shortening the timer rod to the steering wheel.

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RETURN LOADS BUREAU IN BOSTON IS URGED.

Revival of interest in the formation of a Return Loads Bureau in Boston is evident, and the matter probably will be given attention in the near future. Before hostilities ceased in Europe the Boston Chamber of Commerce, at the request of the Council of National Defense, appointed a committee to consider the advisability of establishing a bureau. Plans were well under way for having such an organization when the armistice was signed, and interest in the plan suddenly terminated.

Stoughton Bell, who is chairman of the Chamber of Commerce committee, says that the establishment of such a bureau in Boston will serve no useful purpose unless similar bureaus are established in other industrial centers and all work in conjunction with one another.

Truck men point out that a number of cities have already formed Return Loads Bureaus, and that it is now time for Boston to get one. Trucks are leaving Boston daily for Providence, New York, Springfield and other points, and often they are forced to come back empty. Also trucks arrive in Boston daily from distant points and fail to get return loads.

Because of this situation, it is pointed out, the motor transportation men are obliged to charge much higher rates than they would if they were assured of having return loads.

KELLY-SPRINGFIELD TIRE TO BUILD ANOTHER PLANT.

The Kelly-Springfield Tire Co. has announced an issue of $5,800,000 eight per cent. second preferred cumulative stock, to be offered to common and preferred stockholders for pro rata subscription at $100 a share.

The issue will be sold to pay for the erection of a new plant in Maryland, and will be underwritten by a syndicate to be composed of H. P. Goldschmidt & Co., Goldman, Sachs & Co. and Lehman Bros.

Commenting on the new plant, A. L. Scheuer, chairman of the board of directors of the Kelly-Springfield company, said that when the first unit is completed the production of the company will be increased over the combined output of its three other plants now operating at Akron, O.

BREMER RADIATOR PRODUCTION.

The production of the Bremer Manufacturing Co., Chicago, Ill., manufacturer of cooling sections for truck and tractor radiators, is steadily increasing, according to Ian E. Maltby, general manager of the concern. The geographical location of the company is ideal for sales and distribution to both truck and tractor industries. The demand for radiators was not diminished by the reconstruction period immediately following the European war. Bremer radiator cooling sections are a special fin and tube type for which high efficiency is claimed.

COLER HEADS WESTINGHOUSE EDUCATIONAL DEPARTMENT.

C. S. Coler has been appointed manager of the Educational Department of the Westinghouse Electric and Manufacturing Co. He was graduated as an electrical engineer from Cornell University in 1911, after which he entered the graduate student course of the Westinghouse company at East Pittsburgh, Pa. In the early fall of the same year he was appointed director of mechanical drawing in the Casino Technical Night School, an institution supported by the Westinghouse company to promote the education of its young men and women workers who wish to better prepare themselves for their work by evening study.

After spending three years in the capacity of instructor, Mr. Coler was appointed manager of the entire evening school, and director of trades training of the Westinghouse company, retaining this position until his recent appointment as manager of the educational department of the Westinghouse company and president of the Casino Technical Night School. This appointment was made possible by the resignation of C. R. Dooley, who has accepted a position with the Standard Oil Co. to promote educational work in that organization.

Mr. Coler has taken a very active part in the promotion of educational work in Pittsburgh, being president of the local chapter of the National Association of Corporation Schools, a member of the Society for Promotion of Engineering Education and chairman of the technical sections of the Westinghouse club.

BETHLEHEM AND NORTH AMERICAN COMPANIES TO MERGE.

Announcement has been made that a new corporation would be organized under the laws of Delaware, with an authorized capital of 130,000 shares of no par value, to take over all issues and outstanding stock of the Bethlehem Motors Corporation, Allentown, Pa., and the North American Motors Co., Pottstown, Pa.

Officers of the projected corporation are to be: President, A. T. Murray; vice presidents, D. G. Dery, S. C. Potter and H. B. Hall; treasurer, Martin E. Kern; secretary, M. H. Beary. The directors will include George R. Bidwell, Allan A. Ryan, D. A. Holmes, Charles S. Martin and Robert E. J. Corcoran.

U. S. RUBBER TO SPEND $10,000,000 ON EXTENSIONS.

Of an appropriation of $10,000,000 which the United States Rubber Co. has set aside for plant extensions during the current year, $3,000,000 is for additions to the works of Morgan & Wright, the Detroit subsidiary. The money necessary for this expansion will be taken out of the earnings. Officials of the company predict that the gross business for this year will be between $215,000,000 and $220,000,000, the former being the sales record of last year.

HIGHWAYS MUST MEET NEEDS FOR TRUCK HAULAGE.

R. E. Fulton, vice president of the International Motor Co., maker of Mack trucks, says that the problem of good roads and motor trucks must be regarded from the standpoint of a public utility.

"The problem of production," states Mr. Fulton, "is practically solved, so far as manufacturing is concerned. The problem that confronts us now is that of distribution. Upon the solution of it hinges our whole political, economic and social structure. Transportation is one of the great essentials to distribution.

"With adequate transportation facilities food, merchandise, machinery, etc., can be transported quickly and economically to the point where there is a demand for them. Anything that handicaps getting food to the market is a barrier which prices must surmount. It means still higher cost of living and a loss to everybody. Everyone benefits from the service rendered by motor trucks regardless of who operates them.

"It is a fact which everyone recognizes today that the motor truck is the only solution of the transportation problem. Everything should be done to render the operation of motor trucks more efficient and economical. Good roads are the chief factor. Roads must be built up to the demands of the traffic. The traffic cannot be held down to existing road conditions.

"If a city has outgrown its water supply we do not limit the population, we increase the capacity of the water mains. Just so with highways. We must increase their capacity. The greater the volume of transportation handled the lower the transportation costs."

S. A. E. MEMBERS GUESTS OF SHELDON AXLE CO.

The works of the Sheldon Axle and Spring Co., Wilkes-barre, Pa., was visited by the Pennsylvania section of the Society of Automotive Engineers June 14, which held its annual meeting in that city. The morning was given over to a tour of the plant by the 60 members and following a dinner officers were elected to serve the ensuing year and the bylaws of the main section were adopted. The officers elected were: I. K. Brombaugh, Autocar Co., Ardmore, Pa., chairman; G. W. Smith, Victor Talking Machine Co., Camden, N. J., secretary, and William H. Sackman, Light Foundry and Manufacturing Co., Pottstown, treasurer.

IMPORT OF AMERICAN VEHICLES INTO ENGLAND.

The original ruling of the English Board of Trade relative to the import of American cars into England made no provision for concerns that did not exist prior to the war. A supplementary rule has now been adopted that will allow the importation of cars of firms established later than 1913 to a number to be agreed upon by all members of the automobile section of the American Chamber of Commerce. There will be a revision of licenses Sept. 1.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 7. PAWTUCKET, R. I., July, 1919.

NATION MUST BUILD HIGHWAYS TO DEVELOP ITSELF

Federal Aid Road Construction Based on Haulage of Mails—Needs of Industry and Commerce Can Only Be Served by Definite Plan for Channels for Freight Transportation—All Else Is Secondary.

MAKING appropriation of money does not mean that it will be wisely expended. This is not intended to imply that it will not be expended honestly. But it is intended to emphasize that this great nation, which is at the beginning of an era of road building, should have the work done with a view to the future as well as for the immediate benefits.

This is a subject of great importance. It is one that should receive the most careful consideration of every thinking man. It is not a question of doing some work with the enormous sums of money that are or will be available, but of doing work that will benefit every citizen.

The funds are provided by the nation and the states, and are raised by taxation, either directly or indirectly. The members of Congress and the legislatures of the states have been convinced that highway improvement is necessary and they have authorized expenditures that must be paid for.

Now the main proposition is how the appropriations shall be spent.

Plans Presented by States in Patch-Like Projects.

All the appropriations made by Congress are to be distributed through the Department of Agriculture, of which the Secretary of Agriculture is executive, and with the approval of the Office of Public Roads, a division of the department. The allotments must be equaled by the different states before work can be authorized and the projects must bear the approval of the highway departments of the states before they will receive the consideration of the Agricultural Department.

No one can question the simplicity of the proposition.

But the appropriations must be expended on highways on which postal mails can or may be transported. This is indefinite and seemingly assumes that the projects must be submitted to the Postoffice Department because of the necessity of learning to what degree the roads might be used by it.

This is regarded as the basis for judgment of the need of a highway. It is the only measure by which the value of the road can be determined.

No National System for Road Building.

The primary need is a national plan for road construction.

Nothing of the kind has been proposed and nothing of the kind exists. Unless there is a plan or system of highways determined there is reason to believe that the value of the roads to be constructed will be very small as compared with what might be realized if a national system of roads had been established.

The more one analyzes the subject there appears to be greater reason for a plan that will consist of a basic system of roads which can be developed and which will have increasing economic value as development progresses.

Admittedly, the project is monumental. Beside it any previous national undertaking is trifling. Even the Panama Canal is insignificant, because the construction of highways will cost the nation billions of dollars, and there is apparently no reason why this money should not be expended with the distinct purpose of benefiting industry and commerce.

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Only within a quarter century has there been what may be termed state highway systems. But this does not mean that each state had or now has a plan for road building. In fact the usual policy was to designate certain roads as main highways and connect these so that there might be continuous thoroughfares through certain sections, or, in some, instances, across states in different directions.

Roads Accepted Because They Have General Use.

Primarily any policy meant acceptance of existing roads and improving them to certain standards that were individual so far as each state was concerned, and there never was cooperation with other states with the object of systematically improving highways through them. The only work that might be regarded as being national has been promoted very largely by organizations that are national or sectional in character, such as the Lincoln Highway Association, which has a nation-wide membership and to which contributions have been made largely by those engaged in the automotive industry or are enthusiastic of automobile touring.

Generally highway building has been dependent upon the needs of localities as demonstrated to state legislatures, which have made appropriations, and obviously these have no relation to anything like a national policy. Community requirements have been urged and the legislators have based their judgment largely on political expediency. By that is meant that very rarely has there been a plan that has been developed each year.

Municipal Demands Prevented Systematic Road Building.

Some of the best highway builders, and this refers to those who have had much experience in state road construction, have bitterly complained that no plan could be practically developed so long as there was necessity for expending money in towns or municipalities that could by no stretch of imagination be included in a plan. That is, the influence of country legislators has been directed to getting highway improvements in their districts, refusing to concur in making appropriations unless more or less amounts were spent in their districts. This had the effect of reducing the total that could be expended on the state systems, and development was retarded in ratio to the expenditure for what might be regarded as local improvement. And instead of building the main highways complete and then turning to the communicating roads, these were in every instance built piecemeal.

Further than this, the legislators failed to realize that when the highway had been constructed adequate provision should be made for maintenance. The supposition was, apparently, that once a road had been completed it should be given no attention for a long period, and that neglect until reconstruction was necessary was the practical economic policy, for the taxpayers would complain of large expenses for road building.

National Highways Given Little Attention by States.

One must admit that but little consideration has been given to the possibilities of the use of highways. They were regarded as necessary in a limited degree for the haulage of farm products and supplies, as desirable for those who owned automobiles for pleasure, and as influencing the value of the abutting properties. The needs for industrial and commercial haulage was not thought of.

Up to the European war no thoughtful attention had been given the economic value of highways for freight transportation. The true importance of roads had not been realized. Only when the railroads became congested and large numbers of business men resorted to power trucks for hauls for considerable distances was there awakening to the use that ought to be legitimately made of the roads.

Fundamentally, being built for public use, they should be utilized so far as is possible and the fullest return obtained for the investment in them. As public investments, or public works, they should be maintained so that there would be the least practical expenditure upon them.

All Citizens Approve the Road Building Operations.

Today the need of good roads is universal. The appropriations for construction and maintenance are favored by citizens without regard to political affiliation, and no one will take issue with any reasonable proposition for national or state highway improvement.

The citizens generally are willing to spend the money. They have certainly indorsed congressional and legislative action in providing funds for road building.

But the one great question is: What is this enormous expenditure to be made for?

The mere statement "good roads" is no answer.

Good roads for the mere haulage of mail would seem almost the last reason that could be offered. There is no doubt that the Postoffice Department is the largest of the governmental divisions, at least so far as transportation requirements is concerned, but seeemingly it is secondary to the industries and commerce that have so marvelously developed this country. The transportation of raw materials and distribution of products and of crops have justified the construction of the railroads and the establishment of water lines, and the administration of the postal service is largely to meet the needs of business.

Postal Facilities Has no Bearing on Industrial Location.

There is no reason to assume that any enterprise was ever established with reference to postal facilities. But without exception transportation may be regarded as the determining factor. The reason for this comment is that the purpose of building roads should be first of all for transporting freight, and, because of the limitation of animals, this can be applied practically for the use of power trucks.

The phrase "good roads" may be visualized by the average citizen as smooth highways over which he may travel comfortably in an automobile, with no particular purpose other than pleasure. It may mean nothing more to the business man who has not studied the subject. But it means a great deal to the business man who knows that with the use of trucks he can

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lessen his transportation expense to a greater or less degree, and who knows that the cost of freights by railroad or vessel must be increased.

It ought to mean quite as much to the citizen who faces the actual expense of living, who ought to know that his expenditures will increase at least in ratio with the advance in freight rates.

Where Shall Roads Be Built Is the Primary Question.

No one will take issue with the proposal to build good roads.

But there ought to be very serious debate of the question

WHAT FOR?

No undertaking should be engaged in without a plan. The better the plan the better the result. What we now have in highways is largely the result of failure to plan constructively. The roads we now have should be object lessons of what not to do.

There is no question that the roads that are to be constructed and improved during the next five years will be merely the foundation. On this must be developed the highway system of this country. There can be wanton waste of money or the road building can be made the greatest force for industrial and commercial growth ever conceived.

States Not Advised by Business Men as to Road Building.

Roads cannot be built wherever wanted. The only requirement to obtain the approval of the Department of Agriculture, which allots the appropriations, is that the project shall be approved by a state highway department. Each state is working out its own salvation with reference to state needs, and with no national plan. There is no knowledge of highway departments of states advising with commercial or industrial bodies to determine what highways should be built or reconstructed. Neither is there knowledge of highway departments improving roads upon the recommendation of the Postoffice Department that they are or might be used for the transportation of mail.

The state highway departments have undoubtedly been advised by and have the cooperation of motor vehicle owners' associations, but there are comparatively few organizations of truck owners, and membership in these is by no means confined to those who do considerable transportation.

War Needs Educated People to Power Vehicle Haulage.

The war needs educated the people to the necessity of building good roads. In the value of good roads all are seemingly agreed. But Congress appears to be no better advised than the state legislatures so far as the needs of systematic development is concerned. Just one state has adapted a policy that can be commended. This is New Jersey. It obtained the advice of no less an authority than Maj. Gen. Goethals for future development, and in the plan that Gen. Goethals approved and which was adopted both the commercial, industrial and military needs of the state were determined.

Were each state to construct a highway plan with reference to the needs of industry and commerce, each to be coordinated with the other by a master mind—the best engineering advice that is obtainable with the development of the nation for highway haulage the one object—then the money would be spent to the best advantage.

Not only this, each additional expenditure would have justification that could not be denied.

Roads of France Built to Develop Nation's Industries.

The magnificent roads of France have been building for more than 150 years. They are the principal subject of those of the American army that served abroad. The highways were planned before any other form of transportation was available. They were intended to serve for military purposes in the event of need, but their economic value to the nation was the fundamental reason for constructing and maintaining.

The French nation established a college for training road builders. They were affiliated with the military establishment. The work was done with military thoroughness and efficiency. The development was systematic. The roads were placed in three classes, national, departmental and municipal. A policy of maintenance was determined. With the advent of railroads and water traffic the road construction continued. When bicycles and later power vehicles were practical France had the best roads of the world.

During the world war the efficiency of the French in road reconstruction was marvelous in the minds of foreigners. The French realized that it was merely doing work they had been specially trained for with larger numbers of men working with the best of equipment to meet the needs of any emergency.

America's Great Resources Have Definite Limitations.

As great as are the resources of the United States there is a limitation to the mileage of highways that can be constructed. The development must be systematic. The best that can be done with existing roads is to improve them so far as is practically possible, but they will not have the same economic value they would have if planned as were the roads of France.

Building national highways for power vehicle transportation is essentially a subject that concerns industry and commerce. No one can assume that this should mean a policy of prorating appropriations to each state because it can spend money for roads. It should mean building the highways wherever they will best serve the nation. Where the needs are greatest the roads should first be built, without regard to politics. With this as a basis the development should be systematic.

The people should understand that the freightage now done by road vehicle is but a suggestion as compared with what it will be within the next score of years. The possibilities for economies are enormous. But unless the roads are built to a plan there will be astounding expenditures for all kinds of highways that may be ideal community improvement, but will have no practical use in national development.

Whether or not a plan of road building is determined is up to Congress, but not until the people have made demand.

And the people can have anything they want if they demand it.

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WILL TOUR NORTHWEST WITH TRUCK TRAIN FOR SIXTY DAYS

Chicago, July 14.—Demonstration to prove power truck efficiency is the object of the National Motor Truck Development Tour, directed by the National Association of Motor Truck Sales Managers, which will start from Chicago, Aug. 4, and will end at Milwaukee, Wis., Oct. 4.

This tour will be the first of the kind ever organized and it is expected to be the first of a series which will be conducted in different sections of the country.

The plan has at least the merit of originality and the object is to take into each town and city through which the route shall pass an attraction which will be of decided interest to every citizen.

The number of machines that will make up the caravan is not as yet determined, but as many as 25 and possibly more will start. The plan is to have one truck of each make only in line, and the manufacturer can elect any size machine between the load ratings of one and 2½ tons.

All of the trucks will be equipped with pneumatic tires, which will be another novelty. The tour will be the longest drive of the kind ever undertaken and the total distance to be covered between the start and the finish is in road mileage 2778 miles.

Route Itinerary 2778 Miles.

But there is probability that the trucks will be driven considerably more than the distance established in the itinerary, and probably 3500 miles would be a fair estimate of the total before the trucks return to Chicago, for the finish will be 85 miles from the start. Then there is the distance that must be driven to mobilize the caravan, which will depend largely upon the location of the manufacturer.

The average distance to be driven a day will closely approximate 50 miles. There will be no attempt to make speed because the desire is to demonstrate the uses that may be made of trucks by farmers, and loads will be carried between points that will be determined from time to time and will depend very largely upon the propositions that will be made by the men in charge.

Special Bodies to Be a Feature.

Each manufacturer is expected to have the truck entered equipped with a type of body that will have the greatest utility to the farmer owner, and the sales manager is at liberty to make any choice of body. There is reason to expect that the majority of the bodies will be convertible types that can be adapted for widely varying work, which will be practical in manner of conversion, and be reasonably priced.

The trucks will pick up loads at different points where arrangements have been made for such loading and will transport these to towns along the route. Practically any load will be hauled and the saving of time will be demonstrated and the cost estimated so that the farmers will have substantial knowledge with which to make comparisons of the value of trucks as against animal haulage.

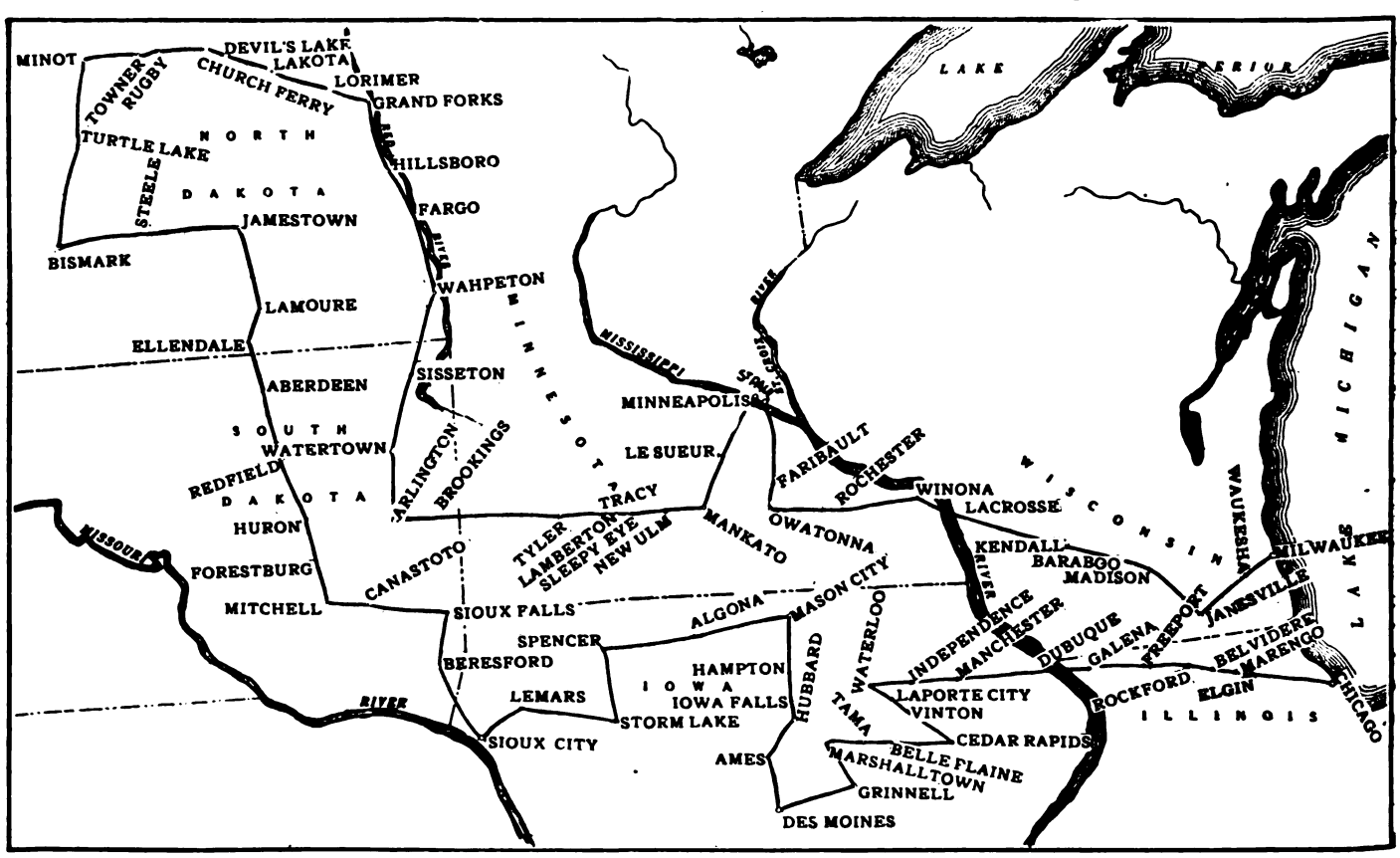
Demonstration of Truck Utility.

The utility of the different types of bodies will be explained and these will be either standard or special designs for carrying grain, corn, oats, loose and baled hay, vegetables, fruits, dairy products, eggs, poultry, cattle, for general work, so that their values may be compared with conventional bodies.

The itinerary has been arranged to include six states, Illinois, Iowa, South Dakota, North Dakota, Minnesota and Wisconsin. It will pass through 72 different towns and cities in which there will be shows ranging in length from one hour to two days. The shows will be all in the open, but the lengths will be dependent upon the size of the communities and the time of the day.

Road Shows to Be a Feature.

For instance, arrival may be made in a town where the caravan will remain during the night. The show may be that evening if early departure is necessary, or it may be the next morning, or both evening or morning. In some instances the show may be begun in the evening and continued through the next day, the departure being the morning of the second day, in one or two an afternoon and evening, and at Devil's Lake, N. D., and Fargo, N. D., the caravan will arrive in the evening, will show the two days fol-



The Route of the National Motor Truck Development Tour, Which Will Start from Chicago, Aug. 4, and Cover 2778 Miles in Six Northwestern States in 62 Days, Staging 72 Shows and Making Demonstrations of Work.

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lowing, and will leave the afternoon of the third day. There will be stops during the day's march for one and two-hour shows. There will be all day shows in Minneapolis and St. Paul and Milwaukee, the last specified being the conclusion of the tour. The march will be made Sundays when necessary, but so far as possible the machines will remain parked from Saturday night to Monday morning.

The intention of the truck demonstrators is to convince the farmers of the practical utility of pneumatic tires by showing what can be done with this type of wheel shoes.

Government Cooperating in the Tour.

The United States Department of Agriculture is interested in the tour and it is cooperating with the management of the demonstration through the agricultural colleges and the county farm agents. Moving pictures are to be taken during the tour which will be exhibited throughout the country to show the uses made of the trucks in practical agricultural work.

The management of the tour has been assured by the government that a band from a naval training station will be ordered to make a "land cruise" through the northwest with the trucks, and a feature of every show will be a concert. Statement is also made that there will be a representative of a large Chicago bank with the caravan, who is to discuss with bankers in the different towns the general proposition of financing truck sales and keeping the "paper" in the towns and cities where the truck buyers do business.

The tour will be preceded by George K. Kiley and Donald M. Wright, who will make the general arrangements for the accommodation of the tourists and who will see to it that the newspapers and farm periodicals will have information sufficiently in advance to inform their readers of the plans for each particular community.

The start will be made from Grant Park, Chicago, and the march will be to Elgin the first day. The second day Maronge, Belvidere, Rockford and Freeport will be visited; the third day Galena and Dubuque, Ia.; the fourth day Manchester, Independence and Waterloo; the fifth day, La Porte City and Vinton; the sixth day, Cedar Rapids; seventh day, at Cedar Rapids; eighth day, Belleplaine, Tama and Marshalltown; the ninth day, Grinnell and Des Moines; the 10th day, Ames; the 11th day, Hubbard and Iowa Falls; the 12th day, Hampton and Mason City; the 13th and 14th days, Mason City; the 15th day, Algona and Spencer; the 16th day, Storm Lake, Le Mars; the 17th day, Sioux City; the 18th day, Beresford, S. D., and Sioux Falls; the 19th day, Canastoto and Mitchell; the 20th day, Forestburg and Huron; the 21st day, Huron; the 22nd day, Redfield and Aberdeen; the 23rd day, Ellendale, N. D.; the 24th day, LeMoure and Jamestown; the 25th day, Steele; the 26th day, Bismarck; the 27th day, Bismarck; the 28th day, Turtle Lake; the 29th and 30th days, Minot; the 31st day, Towner and Rugby; the 32nd day, Church Ferry and Devil's Lake; the 33rd and 34th days, Devil's Lake; the 35th day, Lakota; the 36th day, Larrimere; the 37th day, Grand Forks; the 38th day, Grand Forks; the 39th day, Hillsboro and Fargo; the 40th and 41st days, Fargo; the 42nd day, Wahpeton; the 43rd day, Sesseton; the 44th day, Watertown; the 45th day, Watertown; the 46th day, Arlington and Brookings; the 47th day, Tyler and Tracy; the 48th day, Lamberton and Sleepy Eye; the 49th day, Sleepy Eye; the 50th day, New Ulm and Mankato; the 51st day, Leseur and University Farm; the 52nd day, Minneapolis; the 53rd day, St. Paul; the 54th day, University Farm, Faribault and Owatonna; the 55th day, Rochester and Winona; the 56th day, Winona; the 57th day, La Crosse, Wis.; the 58th day, Kendall and Barabee; the 59th day, Madison; the 60th day, Janesville; the 61st day, Waukesha and Milwaukee; the 62nd day, Milwaukee.

The National Association of Motor Truck Sales Managers has appointed W. F. Sturm director general of the tour and the arrangements have been completed by him. The policy of the organization is to promote the industry and not the individual enterprise so far as this is possible. The plan is in a nutshell to take into the northwest, which is believed to be an exceedingly potential market, a demonstrating caravan that, collectively, will attract widespread interest.

In other words, the truck sales managers are seeming convinced that business men know the value of trucks, and have undertaken to show to those who have not that knowledge the possibilities of power road vehicles for agricultural operations.

PACKARD SALES PLANS PRESENTED ON GREAT LAKES CRUISE.

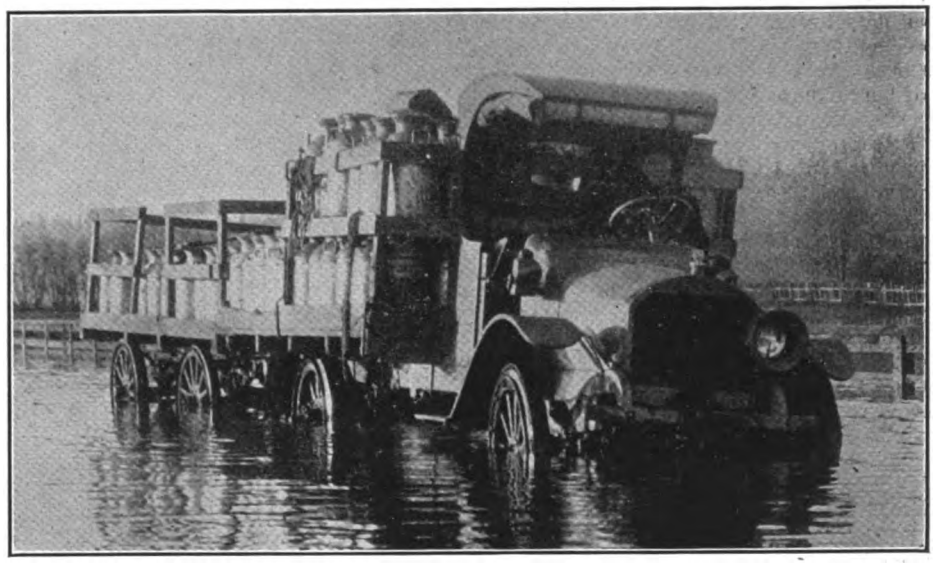
The business theme of a four-day convention held aboard the steamship Noronic on a thousand-mile cruise of the Great Lakes from June 15 to 19 was Packard Motor Car Co.'s plan for the production of motor cars and trucks for the coming season and for the perfection of the distributing organization all over the world. There were 510 Packard men aboard, and their program was about evenly divided between work and play.

Among the themes discussed by company officials were "Packard's Future in World Business," by President Alvan Macauley; "Packard Engineering Plans," by Col. J. G. Vincent, the associate designer of the United States Liberty aircraft motor, and "Aviation," by H. H. Hills. All these subjects were very instructive to the distributors of Packard products.

The exhibits shown aboard included the first Packard car ever built, the first Packard truck, latest type models, and Ralph de Palma's 150-mile-an-hour flyer.

GOODYEAR TRAVELING SALES SCHOOLS OPERATING.

The Goodyear Tire and Rubber Co., Akron, O., has introduced an innovation of unusual interest and real value in sales organization work by establishing week-end traveling sales schools. Capable instructors are sent in teams to the various branches of the company. In this way the men are kept in their territories. Instruction is given Thursdays, Fridays and Saturdays of each week, the earlier part of the week being used by the instructors in preparation and a survey of the field. Class room work covers policy, product and salesmanship with reference to tires, accessories and mechanical goods. The schools prevent the salesmen from losing touch with the factory and thus continues and renews their enthusiasm. In the East and Central West the traveling sales schools have visited Pittsburgh, St. Louis and Kansas City. In the South they have already covered the branches at Louisville, Memphis and New Orleans. At present they are in Indianapolis.



Mack Two-Ton Truck, Loaded with 100 Cans of Milk, Hauling Trailers with 55 Cans (Total Weight 8000 Pounds) Through Flooded Area at Kent Valley, Wash., to Seattle. The Flood Continued Seven Days, but the Milk Supply Was Kept to Normal.

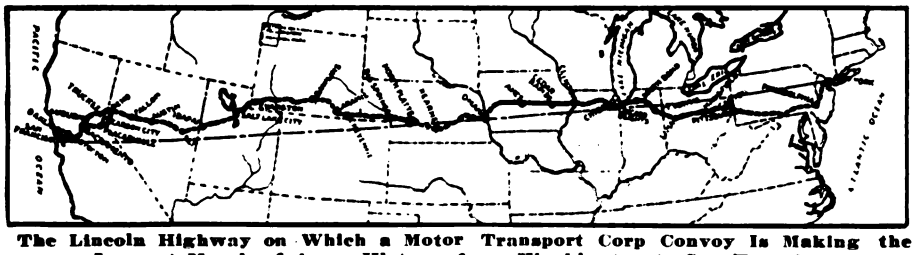
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ARMY MOTOR CONVOY STARTS MARCH ACROSS CONTINENT

Washington, July 7.—The first nation-wide demonstration of army travel, which will have a number of objects, was inaugurated today with the departure from this city of a United States army truck train which will cross the continent to San Francisco. Whether or not there will be further movement of the train, that is, a return by the same or another route, or marches made up or down the Pacific Coast, depends upon the results of the journey as reported by the observers and the interest manifested by the citizens along the route.

Secretary of War Baker and the general staff approved a plan which was developed primarily to determine the expense of army transportation by highway and the speed that could be made under military direction, and later authorized the conduct of general exploitation of highway development propaganda.

According to Brig. Gen. Charles B. Drake, chief of the Motor Transport Corps, U. S. A., the purposes of the march of 3500 miles, which will be the longest ever undertaken by any military organization, are: To afford an extended service and performance test of the different standardized types of power army equipment; to obtain detail data for use in connection with the technical training of the commissioned and enlisted personnel of the Motor Transport Corps and create an opportunity for extensive studies in terrain observations and needed data by the field artillery, the Engineering Corps and the Motor Transport Corps; to demonstrate the practicality of long distance motor commercial transportation and the consequent necessity for the expenditure of governmental appropriations to provide necessary highways, and to assist in the movement for the continuous improvement of, not only the Lincoln Highway, but all the connecting routes in the Union; and last, but not least, to create an opportunity to recruit the Motor Transport Service.



The Lincoln Highway on Which a Motor Transport Corp Convoy Is Making the Longest March of Army History, from Washington to San Francisco.

The march is being made by a train or convoy that will be under the command of Col. A. Owen Seamon of the General Staff until Salt Lake City is reached, and there it will be joined by Brig. Gen. Drake, who will command the unit during the remainder of the march to the Presidio at San Francisco.

Makeup of the Convoy.

The convoy consists of two companies of the Motor Transport Corps, with a total of 10 officers and 210 men in command of Capt. McMahon, an engineers' detachment of two officers and 30 men, a medical detachment, a field artillery detachment and details from the field artillery and air service.

The convoy is making the march with 57 vehicles, including passenger cars, trucks and motorcycles. The cars are designated as light and heavy open, staff observation and reconnaissance; the motorcycles are partly equipped with side cars and the trucks are different sizes, ranging from the light delivery types to the class B machines, which are the heaviest adopted for general army use.

The trucks are equipped with the types of bodies generally known as "escort," and these carry the men and their camp equippage and such supplies as are generally needed. The engineers' unit has a work shop, an office and a searchlight, each of which is a specially adapted truck body. Each company has a kitchen trailer and a fuel and lubricant truck, and one has a machine shop and the other a water tank. The light trucks are used for general detail work and for that reason are faster than the others. They are expected to cover more miles than the others for the reason that they will be used by the "errand boys" of the command, when freights are to be carried, but the motorcycles will be for the messengers.

The vehicle equipment of the two commands is as follows:

Company A.

Vehicles	Type	Make	No.
Car	Open	Dodge	1
Car	Staff	White	1
Ambulance	Army	GMC	1
Motorcycle	Solo	Harley-Davidson	1
Motorcycle	Side Car	Harley-Davidson	2
Truck	Escort	Mack	3
Truck	Escort	Riker	3
Truck	Escort	F-W-D	3
Truck	Escort	White	1
Truck	Escort	Packard	3
Truck	Escort	Class B	3
Truck	Light Delivery	Dodge	2
Truck	Machine Shop	Army	1
Truck	Tank	Army	1
Trailer	Kitchen	Army	1

Company B.

Vehicles	Type	Make	
Car	Open, light	Dodge	1
Car	Open, heavy	Cadillac	1
Car	Reconn'ssance	White	1
Ambulance	Army	GMC	1
Motorcycle	Solo	Indian	1
Motorcycle	Side Car	Indian	2
Truck	Escort 1½-ton	White	6
Truck	Escort 1½-ton	GMC	2
Truck	Escort 3-ton	Class B	7
Truck	Light Delivery	Dodge	2
Truck	Tank	Army	1
Truck	Water Tank	Army	1
Trailer	Kitchen	Army	1

Engineers' Unit.

Vehicles	Type	Make	
Truck	Engin'rs' shop	Army	1
Truck	Office work	Army	1
Truck	Searchlight	Army	1

The convoy is to be self-sustaining and it carries sufficient rations, repair parts and spare equipment of all kinds, and road building tools and such material as might be useful in strengthening bridges and repairing highways so that the heavy vehicles may safely pass. The highway work will not be permanent, but will be of such a character as will make progress of the train practically possible without danger.

The line of march is on the Lincoln Highway, the first night's stop being at Frederick, Md., and will then be by the way of Gettysburg, Wooster, O.; Fort Wayne, Ind.; Chicago Heights, Ill.; Marshalltown, Ia.; Omaha, Neb.; Rawlins, Wyo.: Salt Lake City, Utah; Ely, Nev., and Oakland, Cal. The time given to the march is approximately eight weeks and the destination will be reached in about eight weeks. The distance will be approximately 3500 miles and the marches will range from 400 to 500 miles a week.

The convoy is preceded by H. C. Osterman, vice president of the Lincoln Highway Association, who is driving about two days ahead of the train, who is to advise the commander of the convoy of the road conditions, and he also does whatever work is necessary to advise the people of the different towns and cities through which the train will pass of the approximate time of the arrival of the train.

The reason for this is that the convoy will make stops of varying lengths in the different communities to recruit for the Motor Transport Corps, and there is need of creating as much public interest in the recruiting campaign as is possible. In connection with the recruiting meetings attention will be given to stimulating interest in building good highways and the value of these will be emphasized. The Lincoln Highway Association through its local representatives will participate in the meetings so far as this is necessary to promote the building and improvement of roads.

Vice President Osterman has been authorized to precede the convoy and make all the necessary arrangements for the meetings and to supply the press with publicity concerning them. He expects to have the cooperation of all newspapers, and so far as possible the arrival of the convoy in a town or city and the meeting to be held during its stay will be announced so that it will be regarded as a local event of considerable consequence.

The convoy will camp each night and the regular routine of a military train will be followed. The camps will also

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be interesting for spectators, but these will be more or less remote from the fact that considerable area will be necessary for the train.

The fullest possible statistical and historical data will be kept by officers detailed for that purpose during the course of the run, and daily reports will go to the War Department covering not only the individual performance of every vehicle constituting the convoy, but also engineering reports relative to the condition of the Lincoln Highway, nature and strength of bridges, location of grades, work in progress, etc. Extensive studies in terrain will be carried on by officers of the Engineering Corps and the Air Service, and much data of the greatest value to vocational schools established by the Motor Transport Corps in the training of the commissioned and enlisted personnel will be obtained. Special reports will be sent daily to the headquarters of the Lincoln Highway Association.

Concerning the march Brig. Gen. Drake has made the following statement:

"We hope in conducting this first transcontinental run of an army transport convoy to give an exhibition to the general public of the vast development of the motorized branch of the army and of the motor vehicle for military purposes, which development is conceded to be one of the principal factors contributing to the winning of the war. It is also to be hoped that the trip, in addition to providing experience and data required by the War Department, will serve the purpose of indicating the need for the immediate development of transcontinental highways and of through interstate connecting roads as military and economic assets. This trip over the Lincoln Highway is in a measure the War Department's contribution towards the good roads cause, a movement in which the army is vitally interested."

Letters have been addressed by the War Department to the governors and state highway departments of the 10 states to be traversed, requesting that improvements now in progress or in contemplation for the Lincoln Highway this season be rushed.

The convoy was started from an official milestone which will be the "zero" mark from which highway distances will be computed from Washington, following brief exercises for dedicating the stone. Secretary of War Baker, Gen. Peyton C. March and Brig. Gen. Drake represented the army and the assemblage included a number of prominent civilians, among whom were representatives of the Lincoln Highway Association, Highway Industries Association, American Automobile Association and the executives of a number of large automotive enterprises.

NEW JUMBO TRUCK AGENCIES.

The Nelson Motor Truck Co., Saginaw, Mich., manufacturer of Jumbo trucks, has made agency contracts with the A. H. Abbott Motor Co., Toledo, O., for territory adjacent to that city, and with the Reo Motor Sales Co., Ltd., Toronto, Ont., the latter having the distribution in the province of Ontario.

COOLING THE TRUCK ENGINE TO HOT WEATHER EFFICIENCY

PRACTICALLY every person who had experience with internal explosion engines will assume that they can be operated with better efficiency during the warm months of the year, and for reasons will state that this will apply to carburetion, lubrication and starting, whether or not the initial turning is by hand or a starter. They will also assume that the conditions obtaining in summer afford the maximum by which to judge the results in the colder months.

But as a matter of fact good judgment is as necessary in the use of an engine in summer as in winter, and the possibilities for development of power are dealt with in the following suggestions, made by Alfred F. Masury, chief engineer of the International Motor Co., all of which are practical and may be adopted with the expectation of a material measure of success:

First of all, it is necessary to understand the cooling system. Do not expect the truck to labor in low gear up long grades or through deep sand, perhaps with a trailer, and still keep cool if carbon deposit is permitted to accumulate in the cylinders, if insufficient water is put in the radiator, if the oil level is low or the oil is of the wrong kind.

At the beginning of the season it is ordinarily necessary to change the carburetor adjustment, that in summer being a trifle leaner than that for winter. Overheating is sure to result if the carburetor is improperly adjusted.

Timing has an important bearing on cooling. In hot climates where temperatures are excessive for a considerable part of the year, the engine may be made to run cooler, but at a slight sacrifice of power, by setting the camshaft one tooth ahead (earlier) on the timing gears, so that the exhaust valves open earlier. A weak spark has the same effect as late spark timing and overheating will result.

Difficult grades can be made with greater speed and less fuel in intermediate than if the engine is permitted to to labor in high to the point of stalling. Contrary to popular supposition the engine will cool better if it is not obliged to labor excessively.

Keep the exhaust clear of obstructions and do not allow mud to cake on the outside of the muffler or to clog the outlet.

The radiator must be filled as full as possible. Do not allow the overflow pipe to become clogged, or flattened by a blow or kink or slip down in the radiator.

Use only the best quality of rubber hose for water connections. The inside of cheap tubing is apt to dissolve and the rubber particles clog the system. Go over hose connections in the spring because some anti-freeze solutions have a deleterious effect upon the rubber. Also they leave a scum inside the radiator which will not dissipate the heat. It must be cleaned out.

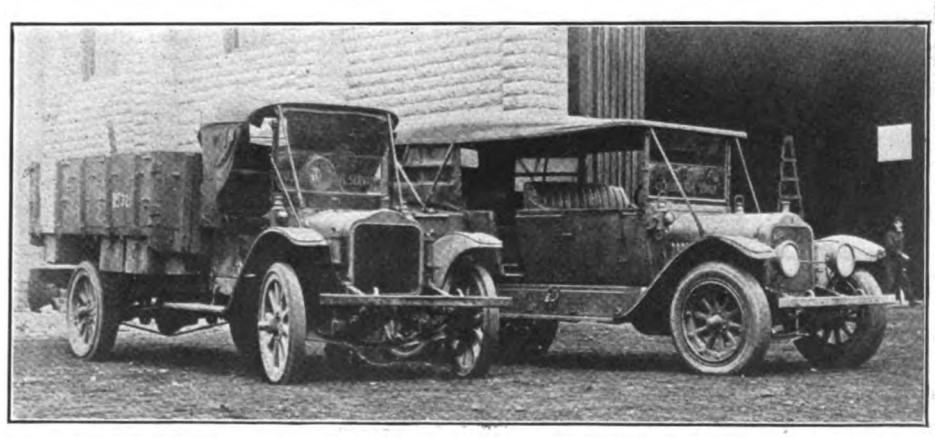
In filling the radiator only clean water should be used. Strain the water through a cloth where none but dirty water is available. Above all do not use buckets in which oil has been kept.

Keep the fan clean and well greased, so that it will turn freely.

Not all of the cooling of the engine is effected by water; but lubricating oil plays an important part as it cools the bearings. Keep the crankcase clean; it cools the oil. It has been found that gasoline washes the lubricant from the cylinder walls and a mixture of gasoline and oil runs into the crankcase, where in time it destroys the lubricating qualities of the oil. For this reason the oil in the crankcase should be drained and replaced with new oil every 1500 miles. If this is not done the oil will not adequately lubricate the rubbing surfaces and heating will result.

The average working temperature of oil in summer is higher than in winter, and so oil of the same body will be thinner. Sometimes it is advisable to use a grade heavier oil in summer. In excessively hot periods an especially heavy grade of oil may be required to maintain the oil at the best consistency in operation. When a heavier oil is used care should be taken not to work the engine too hard before it is warmed. Buy oil only from reliable refiners.

The Prudden Wheel Co., Lansing, Mich., has declared a five per cent. dividend on all outstanding stock.



The White Trucks Used for the Aerial Mail Service at Cleveland, O., with the Aeroplane Hangar at the Field in the Background.

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CONTINENTAL MOTORS CORP. HAS BIG EXPANSION PLAN.

The Continental Motors Corporation is to spend $1,000,000 in expanding its plant at Muskegon, Mich., which will include building a new power house and a manufacturing shop, and the equipment will be rebuilt and added to to greatly increase the production. The expectation is that the changes and additions will double the output of the works.

Statement is made that the annual report, due Oct. 31, will show considerably increased earnings. The stock of the company is now held by more than 5000 individuals, the number of stockholders having increased more than 33 per cent. during the year. There is now about $3,000,000 common stock outstanding, a considerable amount having been recently retired, and there is about $14,000,000 of common stock held by the public.

WHEN BALL BEARINGS ARE TAXABLE.

The Commissioner of Internal Revenue, Washington, D. C., states that ball bearings are not subject to a tax under the law of 1918 unless intended especially for cars, trucks, motorcycles or as accessories for such vehicles.

The law reads as follows: That ball bearings are not subject to the excise tax imposed under section 900, subdivision 3, of the revenue act of 1918, unless they are primarily designed or constructed to be used as a component part of an automobile truck, automobile wagon, other automobile, motorcycle, or parts of accessories for such vehicles.

WILL SHIP A. E. F. EQUIPMENT FROM FRANCE.

The Department of Agriculture is taking over all building equipment in France, consisting of surplus engineering and road building material used by the American Expeditionary Force, and is sending James B. McCord to take charge of this material and superintend shipping it to this country.

Holt First Tractor to Reach Pike's Peak Summit

The first tractor to make the ascent of Pikes Peak, the famed summit in Colorado, was a Holt "Caterpillar," which had been exhibited at the Denver Farm Tractor Demonstration, and driven from Denver to the top of the mountain and back to Denver, a distance of 235 miles. The last two miles of the ascent and for the same distance returning the tractor plowed hrough a snow storm, at times crossing heavy drifts. The highest point reached was 14,109 feet above sea level.

During the long drive from Denver and the climb of the mountain the tractor was in charge of Lieut. Col. M. A. Champlin, who served in the United States army tank corps overseas and is now sales engineer for the Holt Manufacturing Co. The driver was George Rhodes, a skilled tractor man, who demonstrated the first Caterpillar tractor to the British army officials in 1914 and was engaged in test work for the United States Army Ordnance Department during the war. Both Champlin and Rhodes handled Caterpillar tractors during many tests for the United States army along the Mexican border.

At the Denver demonstration with the Holt exhibit Col. Champlin recalled that during the Victory Bond drive a standard six-ton tank was driven partly up the Pikes Peak highway, but encountered deep snow and could not reach the top. According to the statement the tractor was driven to Cascade and made ready and the following day started up the mountain, reaching the summit at 4:45, meeting snow drifts 15 feet deep, the climb being made in seven hours and 45 minutes. The tractor was driven back to Cascade the same day, the distance, including the climb, being 40 miles.

The tractor was a standard ordnance five-ton type such as was built for the United States army and is now manufactured commercially by the Holt company. The accompanying illustration was made of the tractor at the summit, which is the greatest height ever reached by a tractor.



Holt Caterpillar Five-Ton Tractor at the Summit of Pikes Peak, Col., an Altitude of 14,109 Feet, Which Climb Was Made Through 15-Foot Snow Drifts.

DAHLQUIST REJOINS THE TIMKEN-DETROIT AXLE CO.

Charles Dahlquist has returned to the Timken-Detroit Axle Co., Detroit, Mich., after service as a major in the United States army. He has been employed by the Peerless Motor Car Co. and was assistant engineer for the Velie Co., Moline, Ill. Later he was with the International Harvester Co. as chief engineer of its truck department. In 1915 he went to the Timken-Detroit Axle Co. and was made supervisor of inspection of truck rear axles. From December, 1917, to March 15, 1919, he was in the army as technical assistant to the chief of the Motors Division of Purchase, Storage and Traffic. His duties with the Timken company will be that of "customers' representative."

GOODYEAR TEAMS WIN AMERICAN INDUSTRIAL CHAMPIONSHIP.

The track and field team of the Goodyear Tire and Rubber Co., Akron, O., have won the national championship at the annual American industrial track and field meet for the second time in two years. On July 4, in the big athletic conclave held at Gary, Ind., the team won a total of 40 points more than their nearest competitors, the Pullman Car Co. team of Chicago.

This was a real track meet, in which the men taking part had to be fit to win. Every Goodyear athlete was in prime form, the result of the training table rations they had received for two weeks before the meet.

McCLOSKEY IS SECOND ASSISTANT GOODYEAR TREASURER.

H. H. McCloskey has been appointed second assistant treasurer of the Goodyear Tire and Rubber Co. of Akron, O., which he joined as a clerk in the factory payroll department, Nov. 10, 1902. Later he was transferred to the bookkeeping department of the treasurer's office, and in 1910 he became cashier, and this position he held until his recent promotion. He possesses a 15-year service pin.

WILL MAKE PARTS FOR GMC.

A new company recently formed for the manufacture of GMC parts with headquarters in Saginaw, Mich., is the Central Products Co., which has a capital stock of $10,000. This company is in reality a General Motors enterprise, as those interested in it are H. L. Barton, T. S. Merrill and H. H. Rice, all GMC officials.

CHELSEA STEEL BALL EXPANSION.

The Chelsea Steel Ball Co., Chelsea, Mich., are to add 12 new dry grinding machines. The entire production of the company has been sold for the next three months.

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Truck as Tractor for Farm Implement Haulage

Power trucks for highway haulage and tractors for farming operations are regarded as distinct utilities designed and built for specific purposes, neither of which can be practically used for the special work for which the other is constructed.

For this reason an incident during the recent Pacific Coast Farm Tractor Demonstration at Sacramento, Cal., is worthy of more than passing notice. At this exhibition, which was primarily to promote the use and sale of power machinery and implements for farm work, there was a show of trucks by dealers, among whom was J. I. Boldman, district manager for the Denby Motor Truck Co., for the southern half of the western states. He was assisting the Denby dealer, the Sacramento Valley Tractor Co., which was exhibiting a model 27 four-ton chassis.

Mr. Boldman decided to work the truck as a tractor with farm implements and after putting on a capacity of bags of sand to give traction he hitched a four-bottom gang plow to the truck and undertook to do plowing under the same conditions similar work was done by tractors.

The truck hauled the plows at a satisfactory speed and did just as good work as the tractors. Then the gang of plows was replaced by a double disc harrow and the ground plowed by the truck was harrowed. The use of the machine in other operations was barred because of a protest from other truck dealers.

Many tractors will not develop power to haul a four-bottom plow, but plowing is not the hardest work done, for some tractors that will plow satisfactorily will not have traction in a plowed field to harrow. In other words, many farmers regard harrowing a better test than plowing in average conditions.

Claim is made that this demonstration proves that a Denby truck has both power and traction and could be used successfully for both field work and haulage, this being a combination that would have decided value to farmers because they would have in a truck what would have more general value than a tractor that would not be practical for road work.

KEYSTONE TWO-TON TRUCK.

The Commercial Car Unit Co., Philadelphia, Pa., is to build a two-ton truck, designed by Hilton W. Sofield, vice president and general manager of the company.

It has a rated capacity of 4000 pounds, with a maximum permissable weight on the chassis of 5200 pounds, including the body, load and special equipment. It will have a Keystone four-cylinder, four-cycle vertical engine, having four inches bore and 4½ inches stroke, and an S. A. E. rated horsepower of 25.6. Its maximum speed will be 16.2 miles per hour. The wheelbase is 144 inches. The pneumatic tires are to be 34 by 3½ inches or 35 by 5 inches in front and 36 by 6 inches in the rear. The drive shaft has two sections, with three universal joints and the rear axle is a Russel internal gear drive fitted with Timken bearings. The engine is cooled by a thermo-syphon circulation of water and is equipped with a Berling magneto and a Zenith carburetor.

B. F. GOODRICH CO. TIRE BRANCH AT YOKOHAMA, JAPAN.

The B. F. Goodrich Co., Akron, O., is to establish a tire manufacturing plant at Yokohama, Japan. William T. Huston, mechanical engineer for the Goodrich company, has applied for a passport, intending to go to Yokohama, where the factory is being built. It will be known as the Yokohama Rubber Co. The plant will be ready for the machinery in a few weeks.

NEW THREE-TON DENBY TRUCK.

The Denby Motor Truck Co., Detroit, Mich., has announced a new truck to be known as Model 25, having a carrying capacity of 2½ to 3 tons, that is especially adapted for express purposes. It is equipped with a 35 horsepower engine and four-speed transmission, taking a maximum reduction of 52 to 1 on low, and has special frame length and wheelbase.

DETROIT SPRING CO. ORGANIZED.

The Detroit Spring Co., Detroit, Mich., is the name of a new corporation organized by Henry W. Cummings, James D. Cummings and Walter W. Cummings. The capital stock of the company is $50,000.

Midwest Engine Co. to Build New Farm Power Unit

Indianapolis, Ind., July 12—An automotive farm machine that will be known by the trade name of "Utilitor," for which application for registration has been made, is to be produced by the Midwest Engine Co., according to announcement made by Sales and Advertising Manager Lon R. Smith.

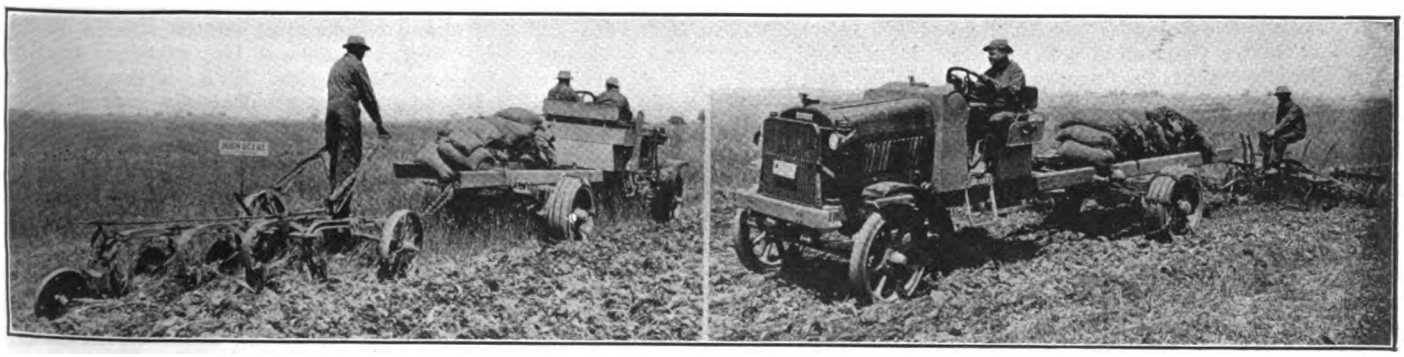
No specific description of the machine has been made known, but it is designed to be used in the place of a small tractor and at the same time have the utility of a stationary gas engine. It may be used for haulage of plows, cultivators, harrows, mowers, drags and other similar implements, and may be regarded as having capacity for practically all the work that can be done with a small tractor.

A specially designed tread can be installed quickly so that it will not cut sod and it may be used for hauling lawn mowers and doing work on country estates, on golf courses, on private gardens and in municipal grounds and parks. It may be driven by its own power wherever required and can be used as a stationary engine for all types of light belt driven machinery such as milk separators, pumps, ensilage cutters, saw mills, milking machines, grindstones, churns, corn shellers, etc.

The Utilitor was designed by the engineering staff of the company in collaboration with the best independent consulting engineers of the country. Broad claims are made for the dependability of the machine, the certainty of its operation and its freedom from mechanical failure. One quality is its efficiency with reference to fuel consumption and development of power. Maximum power can be obtained with a consumption of a gallon of fuel in five hours, and a 10-hour day's work will require about two gallons.

The potential market for the machine is claimed to be very large from the fact that it can be used where tractors are not practical and yet have all of the economy of power.

The Meyers Spark Plug Co. of Toledo, O., has recently been organized with a capitalization of $100,000.



Denby Model 27 Four-Ton Truck Working with Farm Implements at Sacramento Tractor Demonstration: At Left, Weighted with Sand Bags and Hauling Four 14-Inch Bottom Plows; at Right, Harrowing with Double Disc Outfit After Plowing.

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EDSEL FORD PAYS $76,337,500 FOR 6119 SHARES OF FORD STOCK

Detroit, Mich., July 11.—Today the stock of all but two of the minority stockholders of the Ford Motor Co., nine in number, were purchased by Edsel Ford, he being credited with paying a valuation of $12,500 a share for stock having a par value of $100. The total sum paid the nine stockholders at the value stated is, assumedly, $76,337,500.

The stockholders whose shares were acquired are:

Owner	Shares	Value
John F. Dodge	1000	$12,500,000
Horace E. Dodge	1000	12,500,000
J. W. Anderson	1000	12,500,000
H. H. Rackham	999	12,487,500
David Gray	525	6,262,500
Philip H. Gray	525	6,262,500
Paul R. Gray	525	6,262,500
Alice Gray Kales	525	6,262,500
Mrs. A. P. Hauss	20	250,000
Total	6119	$76,337,500

The other stockholders of record are James Couzens, Edsel Ford, Henry Ford and Frank L. Klingensmith, treasurer of the company.

The holdings of these four are as follows:

Henry Ford	11,400	$142,500,000
Edsel Ford	6,419	80,237,500
James Couzens	2,180	27,250,000
Frank L. Klingensmith	1	12,500
Total		$250,000,000

By buying 6119 shares of stock Edsel Ford has increased his holdings from 300 shares to 6419, and at a price that undoubtedly was attractive to the stockholders who sold to him. Obviously, the Fords are convinced that the company is worth the value established in the market as $250,000,000. Henry Ford always had control of the concern with a majority of the stock and he and his son now own what is valued at $222,737,500. The holdings of the Fords in the Ford Motor Co. are specifically referred to and do not include other interests, as Henry Ford & Son, a concern that is capitalized for $5,000,000, but probably has a much larger book value.

No Change in Organization.

The statement that was approved by Edsel Ford concerning the transaction was to the effect that the purchase of the stock was negotiated by Stuart W. Webb of Bond & Goodwin and F. M. Holmes of the Old Colony Trust Co., Boston; that James Couzens was to remain as a director; that the purchase was made by Edsel Ford with his father's consent, and the purpose of buying the stock was a reorganization of the company, although there is to be no change in the personnel of the officers and department heads.

Statement is that J. P. Morgan & Co. will manage a syndicate that will place a one-year credit of $75,000,000 to complete the transaction.

A story that is generally credited is that in 1908 W. C. Durant, now head of the General Motors Corporation, met with Henry Ford and James Couzens in New York City, and as at that time Mr. Ford was not in good health and believed he had sufficient wealth, he and Couzens agreed to sell their holdings in the Ford company for $6,000,000. Mr. Durant started after Wall street bankers, believing he had a worth while chance to make money, but he was unable to convince the financiers that his proposition had real merit. But 11 years later J. P. Morgan & Co. was willing to supply $75,000,000 for Ford to acquire some of the minority stockholders' stock.

The plant of the Ford Motor Co. has 88.22 acres of floor space under roof at the 305-acre site at Highland Park, at which during the war an average of 34,000 persons were employed, and besides this operated the River Rouge shipbuilding plant with 6800 hands, the River Rouge blast furnaces with 4000 hands and 350 hands at the carburetor plant. This totaled practically 45,000.

The Highland Park plant is producing 3000 vehicles a day, which means, if the present production is maintained, 900,000 machines annually, having a total sales value, considering the prevailing market prices, which will exceed $450,000,000. During the war the minimum production was 300 a day.

Henry Ford began in 1891 to build a car and his first machine was finished two years later. After five years he built the second. The Henry Ford Automobile Co. and the Detroit Automobile Co. were organized, but were not business successes. In 1902 Mr. Ford and A. Y. Malcomson engaged in business as partners and from this partnership the Ford Motor Co. was organized June 16, 1903. Ford and Malcomson had expended $7000, provided by the latter, before the company was organized. This was done with Ford and Malcomson holding 51 per cent. of the stock.

John F. and Horace E. Dodge, operating a machine shop as Dodge Bros., put in $5000; John W. Anderson and Horace H. Rackham, members of a law firm that had charge of the legal procedure necessary with organizing the company, put in $5000 each; George S. Gray took $10,000 worth of stock after Malcomson had guaranteed him against loss; James Couzens, a clerk for Malcomson, by payment of $1000 representing his savings, $500 given him by Malcomson and $100 loaned by his sister, and with a note for $1500 took $2500 worth of stock, and Albert Strelow bought $5000 more. This was a total of $32,500 capital, outside of what Ford and Malcomson contributed for their stock. Later Strelow sold his stock to Couzens for $25,000. In 1906 Malcomson sold his stock to Ford for $175,000, and Ford from that time on had control of the company.

Now in Third Plant.

The company had operated in a shop in Mack avenue until Ford bought Malcomson's stock, and then a plant was built at Piquette avenue and Beaubien street, which was occupied until the enormous growth of the business necessitated buying an old race track and beginning the construction of the largest works of the kind in the world.

James Couzens was the first of the Ford family to withdraw from the circle. He was a director and vice president and while he ceased to serve as an executive of the company he did not sell his stock. When the Dodge brothers engaged in business to produce a higher priced car their relations with the Ford Motor Co. became strained, but they retained their stock. When the project to build the River Rouge blast furnaces was launched the Dodges brought suit to compel a division of the profits which, they maintained, they had been denied. The enormous earnings of the company were shown in the suit; in 1914, for example, with capital of $2,000,000, $21,000,000 dividends had been paid. In 1915 dividends aggregating $15,000,000 were distributed, and in 1916 the company earned $60,000,000, but no dividends were paid. The result of the litigation was an order for the distribution of $19,000,000 to the minority stockholders.

Dissolution of Original Organization.

Directly following this decision there was rumor that Mr. Ford was to retire from the company and establish plants and produce a still cheaper automobile than the Ford model T (the standard type chassis), but this was later denied.

Meantime Henry Ford & Son had been organized with capital of $1,000,000 to engage in manufacturing a farm tractor. This capital was later increased to $5,000,000. This was, however, a separate enterprise.

Sales Manager Norval A. Hawkins left the company to enter the service of the government in war work and he has never returned to it. After discharge from the army he was understood to be engaged in organizing a number of concerns in the automotive industry under a plan such as the General Motors Corporation and other corporations are now operating.

Last March C. Harold Wills, who is regarded as the inventive genius of the Ford company—who is credited with designing the model T chassis and who conceived and developed all of the manufacturing processes, even to designing and constructing all the special machinery, with John R. Lee, withdrew from the company. Mr. Wills, whom Mr. Ford could not pay sufficiently well at the organization of the company and was compensated with a small percentage of the profits, is credited with drawing as much as $2,000,000 a year for his services. Mr. Lee was the representative of the Ford Co. in the group of representatives of the automotive industry that cooperated with the War Industries Board of the Council of National Defense at Washington during the war. Mr. Wills and Mr. Lee recently acquired a large area of land in a Michigan city and are ex-

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pected to begin the construction of an automobile which will, according to rumor, have qualities of design and construction that will insure for it a very large sale.

Henry Ford retired from the presidency of the company early in the year and announced his intention of devoting his life to the uplifting of humanity through the publication of a newspaper, having for a foundation the Dearborn Independent, a village weekly he had acquired a few months previously. He was succeeded by his son Edsel, aged 24, who receives a salary of $150,000 a year.

The Ford Motor Co. is credited with having approximately 90 wholesale branches in all parts of the United States and about 30 assembling plants, the value of the buildings and equipment being in excess of $15,000,000. In addition the company has an organization in England that is said to be operating on a very large scale. The production of Ford cars or vehicles until the end of 1917 was 2,133,723, and while the output was reduced greatly during the war, to 10 per cent. of what is now turned out, there is no doubt that more than 3,000,000 machines have been built to date.

The Eastern Holding Co., chartered in Wilmington, Del., with capital of $100,000, has changed its name to the Ford Motor Co. and its capital to $100,000,000. The Eastern Holding Co. was organized July 9, 1919, to deal in investments. The Ford Motor Co. has made no announcement of its financial plans. Directors of the Ford Motor Co. several years ago authorized the increase of the company's capital to $100,000,000, but the maximum capital approved under Michigan law is $25,000,000, and so the increase was impossible so long as the company operated under a Michigan charter.

LANSING BUILDING HOMES FOR GMC EMPLOYEES.

A corporation with $1,000,000 capital is forming at Lansing, Mich., to which the General Motors Corporation has subscribed $250,000, for the purpose of building houses for the employees of the General Motors factories. The organization was undertaken by the Chamber of Commerce when the possibilities for civic development were surveyed. The houses will not be rented, but will be sold so that there will be merely a six per cent. return on the money invested. About 1250 houses will be built in Lansing this year if the plans are realized.

GMC ENGINE PRODUCTION.

Engine production at the GMC plant of the General Motors Corporation, Saginaw, Mich., is greatly increased. At the present time the production is at the rate of 50 engines daily and the company hopes to reach a 200 engine daily production within the next 30 days. At the end of this time the schedule will be increased till a daily output of 300 engines is reached, which rate it is hoped to be able to maintain throughout the balance of the season. The engines are to be used principally in trucks.

Emergency Fleet of 15 Trucks Built for Boston Gas Co.

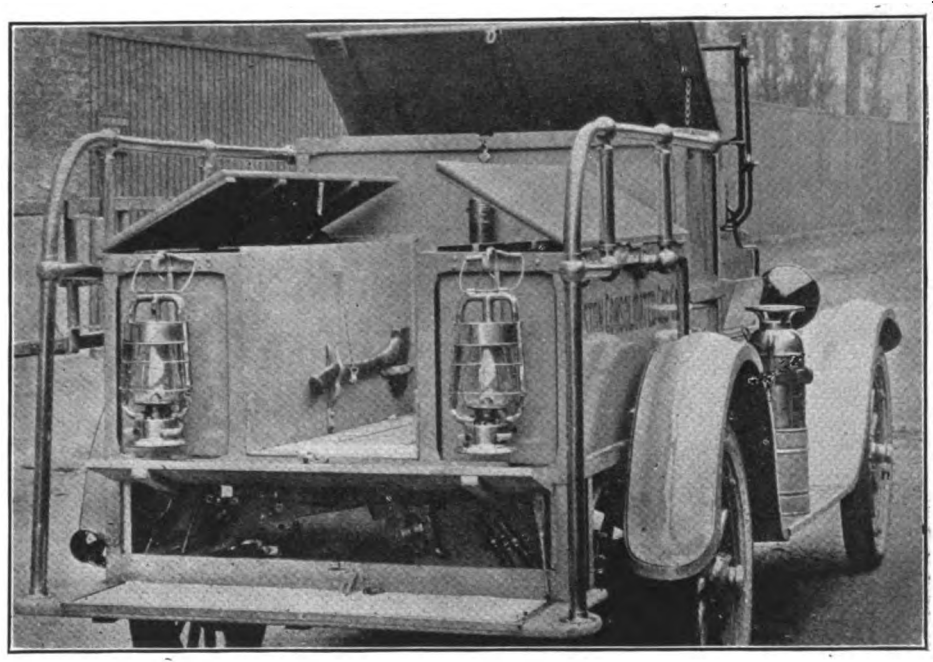
What is regarded as being one of the best examples of standardized equipment in the service of a public service corporation is the fleet of 15 light trucks for emergency work that has just been installed by the Boston Consolidated Gas Co., which serves Boston and a number of the surrounding municipalities. The company has an emergency department that is quite as well organized as the fire department of any large city. It is expected to safeguard the citizens against asphyxiation, explosions and the dangers that may develop from fire, and any of the crews must be ready to instantly respond to any form of call by day or night.

The department consists of 15 crews of three men each, which are stationed in as many different sections of the city, as near the centers of the districts as is practically possible. Each crew responds to all alarms of fire in its district and in addition may be ordered to reinforce another crew in the event of a condition that threatens, such as a large fire, an explosion, or similar disaster, prepared to shut off the gas supplies of buildings or areas, to resuscitate those who may be suffering the effect of gas inhalation and they are subject to call for every gas leak of consequence in the districts.

The crews have light Dodge trucks that are equipped with special bodies, these having been designed for the special needs of the crew. The general construction of the interiors of the trucks is shown in the accompanying illustration. Each truck carries a pulmotor for resuscitation of persons suffering from inhalation of smoke or gas, two gas masks for working in dense gas, smoke or even ammonia fumes; every tool needed for emergency work on gas pipes and mains, including wrenches, bars, hammers, etc.; two fire extinguishers, a ladder for descending into cellars, manholes and the like; ropes, chains, cable, rubber boots and coats and a first aid kit. In addition there are electric torches and such materials as are necessary for making temporary repairs for practically any kind of a gas leak. The equipment is stored in compartments which are quickly accessible and every part of the body is devoted to storage. The trucks are painted a French gray. The machines because of the work in which they are engaged, are driven fast and are worked hard, but they are well maintained.

VALUE OF AUTOMATIC CONTROL OF CLYDE TRUCKS.

A. C. Burch, vice president and sales director of the Clyde Cars Co., Clyde, O., which manufactures Clydesdale trucks, describes the Clydesdale automatic controller as a valuable contribution to motor truck design, that has for its chief object the prevention of depreciation due to faulty driving. The controller prevents a motor from racing when the clutch is released. It stops wear and tear on the clutch and other mechanism, which results from the clutch being engaged while the motor is running at high speed. It eliminates shock and strain due to sudden acceleration and too quick application of power. There is also economy of operation. There is besides a noticeable decrease in the cost of truck maintenance as applying to repair and replacement expense. The controller compels judicious driving. The saving that it effects is proved by a comparison of operating costs. The statement is made that "if steering and gear shifting were automatic the truck would run itself."



Rear of the Body of One of the Emergency Trucks of the Boston Gas Co., Showing the Equipment and Storage Space.

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MIDWEST ENGINE CO. ESTABLISHES FOUR BRANCHES.

The Midwest Engine Co., Indianapolis, Ind., builder of engines and special machinery has established four offices, at New York City, New Orleans, La.; El Paso, Tex., and Jacksonville, Fla. The company has maintained a very large engineering division, but the widespread distribution of its products is such that closer contact with clients has been manifest.

The New York City office is at 111 Broadway, in charge of B. H. Downing, who is the eastern sales manager. The New Orleans office is at 617 Maison Blanche building, with J. R. Lowe as manager. The El Paso office is at 303 Caples building and is managed by Chester B. Loomis, who represents the company in Western Texas, Arizona, New Mexico and Southern California. Mr. Loomis was a consulting and mechanical hydraulic engineer at Los Angeles for several years and served in the United States army during the war, being a major of engineers, attached to the Purchase, Storage and Traffic Division of the General Staff at the office of the Director of Purchases. The Jacksonville office, in the Florida Bank building, is directed by D. J. Carrigan, formerly connected with the Busch-Sulzer Bros., Diesel Engine Co., St. Louis, Mo., and later in business as D. J. Carrigan & Co.

HENRY FORD TO RETURN WAR PROFITS.

Henry Ford has requested Secretary of the Treasury Glass to send an expert to examine the books of the Ford Motor Co. to determine the amount of the profits received by the Ford company on war contracts. It is the desire of Mr. Ford to return his share of these profits amounting to 58½ per cent. to the government. Commissioner of Internal Revenue Roper has instructed the Detroit branch of the Internal Revenue to supply Mr. Ford with expert assistance.

New Twin City Truck Hauls Tractor to Wichita

What was probably the most novel introductory of a new truck ever attempted by a manufacturer without a campaign of advertising was made by the Minneapolis Steel and Machinery Co., Minneapolis, Minn., when a machine which the company is to produce commercially was driven from the factory to Wichita, Kan., loaded with a tractor that was exhibited at the National Farm Tractor Demonstration July 14-19.

The company has built farm tractors since 1910 and these machines are one of the standard makes of the industry. Tractor manufacturing is one division of the company's business, for besides building Twin City threshers it produces structural steel in large volume. That the company purposed to build trucks was unknown until recently, and thus far no statement has been made concerning the mechanical details of the machines.

As the company was one of the principal exhibitors at Wichita, and as its initial market for trucks will be in the Central West and Northwest, the national demonstration was believed to be the opportune time for interesting both farmers and dealers.

Then the plan determined was to deliver a Twin City 12-20 tractor, the 16-valve engined machine brought out last year, to each branch, beginning with that at Wichita. Another idea was to stimulate the interest of farmers in shipping by truck. The truck and tractor, as shown in the accompanying illustration, were sent out to make the drive by easy stages, the crew being instructed to make as many plowing demonstrations en route as were practical. The drive was without accident and Wichita was reached when the city was crowded with visitors.



Twin City 3½-Ton Truck, a New Machine in the Industry, Freighted with a Twin City 12-20 Tractor, En Route Overland from Minneapolis, Minn., to Wichita, Kan.

The company maintains that the undertaking served three purposes, demonstrating the quality of the new truck and the utility of the tractor, and awakening interest in truck transportation.

NEW VESTA SERVICE STATION AT CHICAGO.

The Vesta Accumulator Co., Chicago, has purchased the building and land at the southwest corner of Michigan avenue and 29th street, now occupied by the Chicago Motor Club. The company will immediately begin the destruction of the present building and erect a service station, which will be the finest equipped and the most elaborate in the country.

The purchase was made necessary by the large increase in business during the past year. The company had to have more room at the factory, 2100 Indiana avenue, and the entire service department will be moved to the new location.

With a frontage of 145 feet on Michigan avenue and 180 feet on 29th street, there will be 23,100 square feet of space devoted entirely to battery service. More than 100 cars can be accommodated at once. Cars will drive in the large entrance, receive service and drive out through an exit, both of which will be on 29th street.

In addition to complete equipment for charging and repairing and rebuilding batteries, the new station will have rest rooms for motorists. Special quarters will be provided for the ladies, with telephones, stationary, magazines and other conveniences. These rest rooms and the large show rooms will front on Michigan avenue.

ENGINE CASTINGS CO. BUILDING.

The Motor Castings Co., Milwaukee, Wis., is breaking ground for a new foundry in West Allis. The new corporation is capitalized for $100,000 and was organized by Gustaye Anderson, formerly works manager for the Wisconsin Aluminum Foundry Co., Manitowoc; Arthur C. Swallow and John S. Wilson. The concern will specialize in gray iron and semi-steel castings, the principal products to be cylinder castings, flywheels, crankcases and brackets. Work on the plant will start at once and be pushed so that the first metal will be poured about Sept. 1. One cupola will be provided with a capacity of 300 tons a month. The building will be 111x180 feet, leaving room for a second cupola later.

LEITELT IRON WORKS REORGANIZED.

The Leitelt Iron Works of Grand Rapids, Mich., has recently been reorganized with a capital stock of $250,000 and is about to incorporate. David C. McKay, who has been a member of the concern for the past four years, is president. The other officers include: Vice president, F. J. Zylman; secretary and general manager, F. H. Meyer; treasurer, G. W. Sachett. The directors will consist of the officers of the company and Charles B. Kelsey, chairman; A. L. Murray and S. O. Fink.

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ONE STATE LICENSE FOR BUSINESS TRUCKS AND CARS

Washington, July 10.—All owners of trucks and other power vehicles used in interstate commerce, and this will include many thousands of passenger cars that are used for business purposes, must be concerned in Senate bill No. 7 and House bills Nos. 540 and 2857, which are identical, although introduced by three different members of Congress, as these provide for Federal regulation of machines so used. The bills in effect provide that a truck or car included in the classification stated shall be required to pay a single registration or license fee, and that in the state in which the owner resides or does business, so that no state shall impose an additional license tax.

There is much merit in these bills, one of which ought to pass, and there is little doubt that one will be enacted into law provided that sufficient pressure is exerted upon the senators and representatives of each state by the citizens of each commonwealth.

Without Federal regulation each state can impose any registration or license tax upon a truck that the members of its legislature vote to approve, and as the tendency of each state government is to heavily tax trucks because of the belief that they "wear" highways, when two or more registrations are required this makes the entire amount paid by the owner for the privilege of using the roads that he is also generally taxed to build a serious business proposition.

Bills for Federal Regulation.

The bills now pending in Congress are broad and are intended as a distinct aid for the promotion of interstate commerce by highway vehicle. There is no question that a state can charge any reasonable sum for registration of a truck, this being assumed to be a legitimate use of the very indefinite police power that is regarded as essential for the preservation and maintenance of the rights and protection of citizens. The United States Supreme Court has determined that registration is necessary and that a state is not limited in its charge for such licensing.

There are, however, certain factors that have never been presented to the United States Supreme Court as a basis for determination of the taxing power of states. The generally accepted definition of a tax is legalized authority that fixes definite amounts to be paid to a city, town, state or government, provides for the accumulation of a fund and specifies how that fund shall be expended. The primary object of vehicle registration is to establish the identity of owners and drivers of vehicles wherever they may be and establish responsibility for accidents or any event or circumstance that may be violation of law or prejudicial to the rights and privileges of citizens.

Assumedly a fee sufficient to defray the actual expense of maintenance of a department that would issue license and generally regulate traffic through control of licenses would be sufficient to meet all requirements, but without exception all states have taxed power vehicles owned in these states, and, so far as possible, all vehicles brought into them from other states, the reasons being "damage to highways" as a rule, or that the "users of roads ought to pay for them," the fees increasing constantly and the revenues being depended upon to insure funds for highway building or maintenance.

Years ago high registration fees were advocated very largely by residents of rural sections because of antagonism to "city folk" driving through country roads to the discomfort or perhaps even danger of owners of animals. While the number of horses in the country is probably equal to the number owned a decade ago, there is a total of approximately 6,500,000 power vehicles in use, and for several years farmers have been buying machines far more freely than any other class.

Nation Wants Improved Highways.

Ten years ago the proposal to impose taxes to build roads was very generally opposed outside of the cities, while today the nation is more anxious to spend money for highway construction than for any other purpose, because there is realization that larger practical benefit will obtain than from any expenditure of public funds. The nation and the states will expend in five years in projects in combination approximately $600,000,000, to say nothing of work that will be independent of Federal aid, which will probably increase the total expenditure for construction alone to at least $1,000,000,000. And in addition to this will be the cost of maintenance of these roads. Besides all this there will be the expense for building and reconstructing thousands of miles of city streets.

But the people are beginning to realize that if they provide the money to build roads these should be so built and maintained that they will endure, and they are demanding the character of engineering that will insure the work being adequate for the entirely different form of traffic that will move over the highways. The proposal to build roads to give employment to returned soldiers has been enthusiastically favored. The only criticism is that the work cannot be begun as quickly as is desired.

Federal Highway Commission.

Pending in the United States Senate is the Townsend bill, which provides for the creation of a Federal Highway Commission which shall have a jurisdiction over national highways similar to that of the Interstate Commerce Commission over railroads, and those who advocate it maintain that if the bill is enacted $425,000,000 will be spent in the next five years on national trunk line highways. This is an important measure in the minds of those who have studied the subject and practically all organizations of road building officials, road building engineers, road material manufacturers, road building machinery manufacturers, the National Automobile Chamber of Commerce, the National Automobile Dealers' Association, state highway officials and innumerable industrial and commercial and transportation organizations have recommended that the bill should be passed.

The various agencies that are actively working to obtain the support of congressmen for the bill maintain that telegrams and letters sent to all the congressional delegations of each state will be beneficial; that these letters and telegrams should be sent immediately by all citizens who are interested in good roads.

Highway Transportation Possibilities.

There is no doubt that highway transportation will be increased rapidly, and the possibilities are seemingly without limitations. But the development will be in ratio to the character of the highways, and it will be greatest where the roads are best built and best maintained. There may be those who will maintain that truck manufacturers and dealers want to sell trucks, and are chiefly interested because of the probable profits. This might be seriously considered were not there knowledge that freight rates are constantly increasing, and there is prospect of still further increases.

The only possibility of escaping railroad charges will be the diversion of freight now carried by railroads that can be carried by trucks. Not only this, the public can control thousands of truck transportation companies and obtain exactly the service they require, which control has never been possible with railroads. But there is every reason why highway haulage at least so far as applies to interstate commerce, be regulated, and this will mean systematic and general control that will benefit the people immeasurably.

The passage of the Townsend bill will be a decided national progress, and the thoughtful attention of every citizen is directed toward the importance of immediately communicating to state congressional delegations the necessity of favoring it when it is placed before them in their respective branches.

WAR DEPARTMENT TO SELL PLATINUM TO BIDDERS.

The War Department at Washington, D. C., has announced that platinum will be offered for sale at a minimum of $105 per ounce, and iridium at a minimum of $200 per ounce. The prices and orders are subject to cancellation without notice. The minimum offer which will be considered will be for 10 ounces and the maximum to a single purchaser will be 1000 ounces. The sales will be made from the New York assay office.

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NEW MACK ROTARY FIRE PUMP

A NEW Mack improved rotary fire pump, which by an extremely simple invention entirely eliminates pulsation or vibration, the objectionable feature of all previous types of rotary pumps, is now built by the International Motor Co.

The cause of this pulsation in all other types of rotary gear pumps is that the incoming liquid must enter the tooth spaces from directly beneath or in a radial direction, and must be squeezed out directly above, also a radial direction. It is clear that the direction of flow of the incoming liquid will have to be reversed and that all the liquid in the tooth spaces after the teeth begin to mesh again will be subjected to a "squeeze." Both the reversal of the direction of flow and the final squeeze of the liquid cause vibration.

In the Mack rotary fire pump this vibration is completely nullified by the lateral intake and the lateral discharge. The ordinary rotary gear pump consists of two toothed wheels in mesh, rotating in a case or housing, the sides and ends of which are in close contact with the wheels or gears. This housing contains an intake opening directly underneath the point where the gears unmesh and an outlet or discharge opening directly above the point where the gears start to mesh.

As the teeth start to unmesh there will be a partial vacuum created before the unmeshing teeth break contact. When the teeth break contact this vacuum is filled by water rushing in violently. The effect is the same as would be produced by striking the teeth with a hammer. This shock is called "hammer knock," "pulsation" or "vibration." Also when the teeth come together again at the top of the pump to force the water out through the discharge passage, in the ordinary rotary pump the teeth practically make contact before all the water has been squeezed out of the tooth cavities. The remaining water must be forced very rapidly through a very narrow opening. The "hammer knock" is repeated, jarring the mechanism and pulsating through the hose.

In the Mack rotary pump, water is taken into and squeezed out of the tooth cavities from the sides as well as at the top and bottom. This gives a smooth, steady flow of water entirely free from hammering, pulsation or vibration. The result is more gallons per horsepower with less revolutions a minute of the engine.

Low Pump Resistance.

The nearer the path of any liquid passing through a pump approaches a straight line, the lower will be the resistance offered by the pump to the flow of the liquid. The lower the resistance in a pump the higher the efficiency of that pump. The Mack rotary pump has an efficiency of 83 per cent.—from 10 per cent. to 20 per cent. higher than that of any other type.

Horsepower (hydraulic) equals gallons per minute times pressure divided by 1714. The underwriters demand 10 gallons per minute per horsepower at 120 pounds net pump pressure. Working this out to find the efficiency, we get $\frac{10 \times 120}{1714}$ which is .706 hydraulic horsepower, an efficiency of 70.6 per cent. The Mack rotary pump delivers 12 gallons per minute horsepower at 120 pounds pressure. $\frac{12 \times 120}{1714}$ equals .83 hydraulic horsepower, or an efficiency of 83 per cent.

Aside from the advantage of lateral intake and lateral discharge, the Mack rotary fire pump possesses three exclusive features, which place it in advance of all other types.

Three Exclusive Qualities.

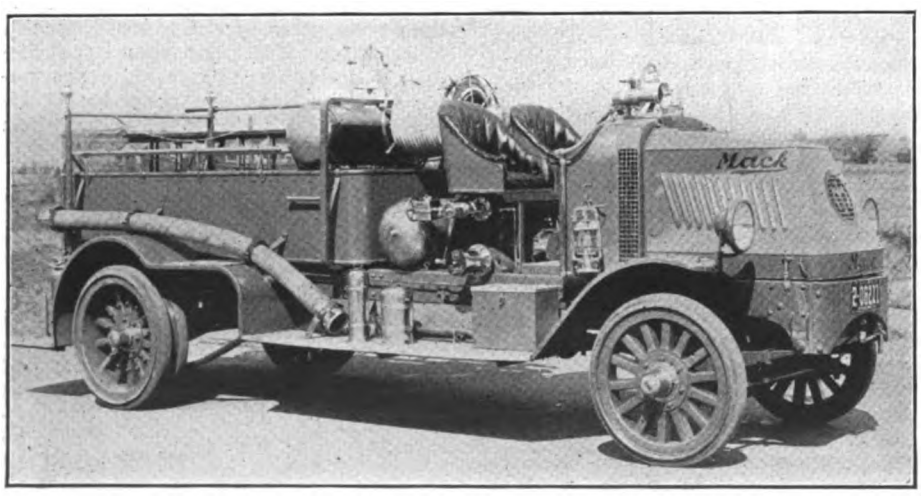
First, hardened steel pilot gears. The "water gears" of the Mack as of other good pumps, are bronze. Bronze is very tough, but reasonably soft and susceptible to wear. It is obvious that if one of the water gears is an idler and is driven by the other bronze gears, the pressure between the contact surfaces combined with the sand grit which is always present in muddy water, will wear away the bronze and will result in a constantly decreasing efficiency. In the Mack pump the gear shafts are extended through the rear pump head and on each shaft is keyed a hardened cut steel spur gear. These steel gears are housed in an oil tight compartment and run constantly in a bath of clean lubricating oil. These steel gears take all the pressure and all the wear. Hardened and ground steel gears running in clear oil will show less wear in doing a certain amount of work than will bronze gears doing the same work in muddy and gritty water.

Second, low pressure packing. Every rotary pump must have stuffing boxes and packing on each end of both shafts. In the Mack, all water which leaks past the "bridge" from the outlet side to the shaft is by-passed through patented grooves into the suction chamber. Therefore, the packing in the stuffing boxes need be drawn only tight enough to overcome the atmosphere or gravity pressure instead of the full pump pressure, as must be done in other rotary pumps. This cuts down the friction power less and increases the efficiency of the Mack.

A feature of the operation of the Mack rotary fire pump is that it is operated from the ground by only one man.

During a big fire in the Chicago Stock Yards which lasted 17½ hours, the Chicago fire department used a Mack rotary fire pump, which had been sent to Chicago for demonstration and had been purchased by the city. Although the operation of the pump was new to the Chicago firemen, it was the only gasoline motor fire apparatus that worked continuously for the entire 17½ hours. As a result of this remarkable showing the Chicago fire department placed orders with the International Motor Co. for five more of these pumps to be built immediately.

The chassis and engine specifications of the new Mack rotary fire pump equipment are the same as those of Mack trucks of similar size.



Mack Truck Chassis Equipped with a New Type Rotary Fire Pump That Is Claimed to Be Entirely Free of Vibration, Designed Expressly for the International Motor Co.

WARNER CHIEF ENGINEER FOR NELSON.

Cecil B. Warner has been appointed chief engineer of the Nelson Motor Truck Co., Saginaw, Mich. Mr. Warner has been connected with Gramm-Bernstein Motor Truck Co., Lima, O., for the past five years, and during the past year was chief engineer of that organization. He was formerly with the Warner Gear Co., Muncie, Ind., and the Willys-Overland Co., Toledo, O.

NEW AHLBERG BEARING BRANCH.

The Ahlberg Bearing Co., who specialize in regrinding worm ball bearings and giving service on new high grade bearings, has opened a new branch in Pittsburgh. This is the third branch opened by this company within the past two months.

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TRAFFIC TRUCK SALESMEN IN UNIQUE CONTEST.

Harry H. Hawke, general sales manager for the Traffic Motor Truck Corporation, St. Louis, Mo., originated and promoted a unique method of sales contest, known as the Traffic Sales Flight. The contest takes the form of transatlantic air flight, following the route covered by the United States navy aeroplanes recently from New York to Plymouth, via Halifax, St. Johns, Azores and Lisbon. The distance to be covered is 1000 points, and an allotment or quota of trucks and dealer contracts counting so many points each, is apportioned to the Traffic salesmen throughout the United States.

A chart of the flight is kept in the sales office of the Traffic corporation, which is designated as a signal station. On this chart each salesman is represented by a small aeroplane. The aeroplanes are changed daily to show the positions of the salesmen. Each salesman is given a miniature chart on which he can determine the positions of the other competitors. Messages are exchanged daily during the flight between the signal station and the pilots. Failure on the part of a pilot to send a message daily will penalize him a number of points. The contest will be completed Sept. 1.

TWO NEW CLYDESDALE LIGHT TRUCKS.

The Clyde Cars Co., Clyde, O., has brought out two new models, that will be known as No. 32 and No. 42, to meet a demand for smaller capacity trucks. These are one ton and 1½ tons capacity, respectively, and have in general the same constructional features as the heavier machines. The new trucks meet the demands for quick delivery work and lighter loads. They are adapted to either long or short hauls and particularly efficient where driving in heavy traffic necessitates a great deal of gear shifting. They are equipped with the same Clydesdale automatic controller, which will prevent racing of motors and clashing of gears, and leave the driver free to fix his attention on the road.

National Tax Repeal Bills Favored by Dealers.

Washington, July 7.—Great activity has been manifested by the National Automobile Dealers' Association in a campaign that is now very general throughout the country to obtain repeal by Congress of several bills which are regarded as imposing unjustified taxes upon power vehicles by terming or classifying them as luxuries.

One bill approved is the Senate joint resolution No. 24, which repeals section 900 of the war revenue law that imposes an excise tax on automobile cars and trucks, parts and accessories; another bill not approved is House resolution 6559, which proposes to amend the war revenue law, section 900, by making the tax on automobile cars and trucks, chassis and accessories three per cent.

The members of the association have been urged to request all of the congressional delegates from their respective states to do all that is possible to obtain repeal of the section of the bill imposing taxes upon power vehicles and they have in turn requested power vehicle owners and public men of prominence to use their influence. The use of telegrams so far as is possible has been advised, these to be followed by letters.

The object of the dealers is not to obtain what will materially benefit themselves, but what will directly benefit the entire people of the United States who are buyers of cars or trucks, or who have occasion as owners of vehicles to buy accessories, parts or equipment that are generally included as necessary or desirable.

FIRST AERIAL EXPRESS DELIVERY OF TIRES.

What was the first aerial express delivery in the history of air flight was made by the Federal Tire Co., Cudahy, Wis., to the plant of the Willys-Overland plant at Toledo, and it was from every point of view a practical form of transportation.

The flight was arranged for by George W. Browne, distributor for Overland machines at Milwaukee, who is convinced of the commercial possibilities of aircraft. The first trip was planned to the Overland plant and it was made by two Curtiss biplanes, one of which was piloted by Lieut. Milton Elliott and the other by Lieut. Shirley Short. They were accompanied in the flight by Lieut. O. L. Locklear, who achieved international fame as being the first man to transfer from one aeroplane to another while in full flight.

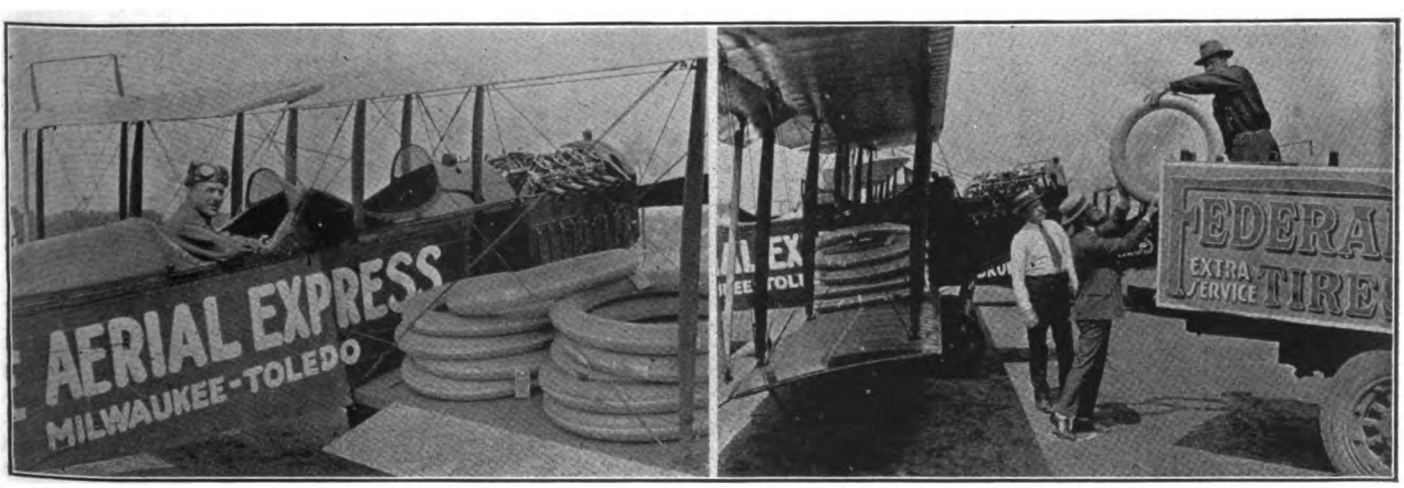
The trip of the express planes was made practically without incident, they starting from Cudahy and stopping at Chicago en route for gasoline, alighting close to the Overland factory after a journey of about 300 miles.

The accompanying illustrations were made during the preparations for the flight at Cudahy, one of these being a plane with Lieut. Elliott ready to leave the ground, and the other is of a loaded plane with N. A. Githens, general sales manager of the Federal Rubber Co. of Illinois at the left, and next to him is A. J. Zealley, advertising manager for the same company.

Mr. Browne believes that there are excellent business possibilities for aerial express service and he has planned to establish an aviation field at Milwaukee, where he has an agency for Curtiss airplanes. He purposes to sell these for general transportation purpose uses and will have several which can be chartered for quick deliveries of loads to capacity within reasonable distances.

GOODYEAR TIRE REPAIR STUDENT FROM JAPAN.

In the factory tire repair school of the Goodyear Tire and Rubber Co., Akron, O., there is a student taking the course who has traveled more than 12,000 miles to attend it. His name is Roy Gatow. After completing the course and gaining some experience on tires that have been used on American roads, he expects to return to his home in Japan, where he will introduce Goodyear methods of repairing tires.



The First Aerial Express Plane of Commercial Record: At Left, Lieut. Milton Elliott, Ready to Start from Cudahy for Toledo, O.; at Right Loading a Plane at the Federal Rubber Co.'s Factory.

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STATE AID FOR RURAL EXPRESSING PROPOSED FOR NEW YORK

REDUCTION of the cost of food for those living in cities is the chief object sought in a recommendation made to Gov. Smith of New York by the State Reconstruction Commission that a temporary non-salaried State Highways Transport Committee be appointed to promote the operation of power truck express service throughout the state.

During the war the Highways Transport Committee of the Council of National Defense was created, which was later organized with 13 regional organizations, and the different state Councils of National Defense undertook to promote general highway transportation, which was primarily to relieve the railroads of the congestion resultant from local freightage. The Highways Transport Committee undertook to educate shippers to greater use of trucks utilized for long distance haulage by providing "return loads," but this was not productive of substantial results because of conditions that could not be controlled when operation of trucks depended upon individual initiative and there was no definite plan of operation.

The Highways Transport Committee promoted and entered upon a campaign for the stimulation of power truck rural express service, in which it had the cooperation of the National Automobile Chamber of Commerce, and considerable publicity was given to facts relative to the operation of services in several different places in the United States.

First State Recognition of Possibilities.

The New York State Reconstruction Commission's report is principally interesting in the fact that it is the first state recognition of the possibilities of transporting food crops to the markets so that the farmers will dispose of greater volume of agricultural products, and the people will benefit from the probably lower prices that will obtain.

The commission proposes that the state stimulate the organization of power truck services in rural communities and suggests that this had best be done by cooperative associations, believing that there are large possibilities in these that are organized to the general plan of the Farmers' Cooperative Co., Inc., of Hartford county, Md., which has been cited by the Highway Transports Committee of the Council of National Defense and the National Automobile Chamber of Commerce as the best example of rural express service of which general information is available.

State's Promotion Limited.

The extent to which the state can go in the promotion suggested is seemingly recommendation, because there is no fund available with which it can subsidize such services as are proposed, and obviously there are periods of the year when the volume of freight would be very large and periods when it would be comparatively small. The trucking concern that depended upon a constant tonnage for its revenue would necessarily have to make rates that would insure it a reasonable profit and the service would have to be sufficiently elastic to carry very heavy freights during the movement of the crops.

The cooperative organization would not necessarily be profit making. The return the stockholders would obtain first of all would be transportation at the lowest possible cost, and the rates could consistently be established to provide for all expenses and dividends that would justify the investment of funds in the company. The rates would be absolutely controlled by the stockholders and all who are afforded service could reasonably be expected to buy shares.

The Prospect for Other Service.

In the event of the farmers not being interested sufficiently to organize such companies as suggested the only recourse would be to interest trucking concerns to engage in rural transportation, which obviously must be from the angle of the financial earnings, which would necessarily be sufficient to justify investment. To what extent a state commission could go to induce concerns to engage in business is problematical. What could be done by a commission whose members could only devote incidental time is uncertain.

There are men who might serve without compensation and give much or even all of their time without compensation, but such a commission to be effective cannot be composed of men of general knowledge. They should be transportation experts, and men whose advice would be authoritative. The average man of affairs may be well versed in many subjects, but highway transportation must be scientifically planned and administered and operated, and there is even greater need of expert advice, because success or failure of the entire proposition will depend upon the manner of operating the first services organized.

Organization of Services.

The State Reconstruction Commission undoubtedly gave considerable attention to the subject before making recommendation, and it was influenced by the information it received from various sources. But the crux of the proposal is to induce the organization of companies that must make considerable investment. Cooperation in raising capital by selling stock to those who will directly benefit from the services is logical and reasonable. The greater the number of stockholders the larger the direct interest and the more practical the support that can be relied upon. And the larger the tonnage the lower the cost of hauling. There is no question of this. There is decided advantage in a service that can be controlled to meet the requirements of the stockholders and there is a satisfaction obtaining when there is realization that the service is being operated at the lowest rates that are practically possible.

How Shall the People Benefit.

But just how rural express service will benefit materially the people of the state is not explained. New York City is in the extreme southeastern corner of the state. It has about 60 per cent. of the population of the commonwealth. Buffalo, Rochester, Syracuse and Albany, which are the other principal cities, are approximately 507, 418, 328 and 145 miles from New York City by the most direct route through all of them by rail or water, and they are on the main line of communication through the state from east to west.

Obviously, rural express routes would serve the smaller markets more than New York City. There would not be a greatly increased flow of food crops into the metropolis simply from the fact that crops within haulage distance are now disposed of in that market, and those in sections more remote are not as profitable because they are largely perishable and the cost of transportation is necessarily increased with the distance. What could be resultant from better supplying those small cities is uncertain.

Farmers Favor Truck Haulage.

In reply to a questionnaire sent to leading farmers, the New York State Reconstruction Commission has received hearty indorsement of the rural express service in every county of the state, especially Wyoming, Alleghany, Albany, Rensselaer and the fruit and vegetable regions, such as Delaware, Sullivan, Dutchess and Putnam.

The Reconstruction Commission suggests that the State Highways Transport Committee, which it recommends be appointed by the governor, shall include the State Commissioner of Highways, a representative of the State College of Agriculture or the County Farm Bureau Organization, a representative of the State Department of Farms and Markets, and two other public-spirited men interested in this subject, but not connected with any concern having to do with the manufacture or sale of power trucks.

The necessity for good roads is pointed out along with the direct connection between the establishment of motor express lines and the problem of permanent improvement of the highways of the state. It is indicated that since the state received in 1919 from auto fees alone almost $5,000,000, a policy of far-reaching road improvement could be pursued without additional taxation.

MARKET IN STRAITS SETTLEMENTS.

The American consul in the Straits Settlements reports that a market exists for motor trucks, motor rickshaws, rubber tires, machinery and tractors.

A letter forwarded from the president of the Chamber of Commerce of Penang requests that catalogues of all automotive products be sent to its headquarters.

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STORM MANUFACTURING CO. TO REMOVE TO MINNEAPOLIS.

The Storm Manufacturing Co., Thompson, Ia., will remove its main office and factory to Fourth street and Sixth avenue, Minneapolis, Minn., and will be established there by Aug. 1, but will continue the Thompson shops temporarily, probably closing them before the end of the year. The company has had a branch at Minneapolis for two years and consolidation was believed to be the best manner of dealing with the demands for increased production and better shipping facilities.

The company produces Storm cylinder reboring machines for hand and power operation, connecting rod reamers, jigs and straightening gauges, valve port renewing tools, main bearing babbitting and boring tools, piston vises and special pistons.

TRAINING GRANT TRUCK DRIVERS.

The Grant Truck Sales Co., Cleveland, O., is undertaking to train truck drivers to greater efficiency by a course of six lectures given once a week that deal generally with driving. The classes are assembled and addressed by well known authorities on different subjects, usually representatives of manufacturers of tires, engines, clutches, transmission gearsets, springs and electric system of different kinds. The instruction includes practical care and adjustment of the different units. The expectation is that better drivers will better satisfy the truck owners and repeat orders for Grant trucks will follow. A good deal of interest is manifested in the school.

CHANGES IN SERVICE PERSONNEL.

R. C. Spinning, formerly assistant manager of sales and advertising for the Service Motor Truck Co., Wabash, Ind., has been made advertising manager. Frank L. Johnson will be manager of sales promotion. Mr. Johnson was formerly with the Stutz and Simplex organizations, and was with the White Co. until his enlistment in the Marine Corps, where he served as lieutenant. E. T. Herbig, who was both sales and advertising manager, will assume the duties of sales director.

Everyway Truck Body Convertible Into Five Types

A general utility truck body has been designed and is now built by the Highland Body Co., Cincinnati, O., which is convertible into five different types, and is claimed to have decided advantages as compared with any other form of truck equipment. It is designated as the "Everyway" body and because of its particular utilities claim is made that it will be equally as useful for the farmer as for the business man, for with a single body a great deal of work can be done for which special types have been used that are not suited for other requirements.

The body may be utilized as any one or all of the following types: Stock rack with water tight under body, high grain tight body, low grain tight body, basket rack, hay rack and passenger carrying, with capacity dependent upon the size of the vehicle.

The body is now built in three sizes that have the following capacities:

Truck Capacity	Weight	Load Space	Cubic Feet
¾-1 -Ton	800	62x 96 in.	55- 96
1½-2 -Ton	850	62x126 in.	72-126
3 -3½-Ton	1000	62x144 in.	63x144

The body is self contained, that is, all parts that are utilized in converting it are on the truck at all times, so that the changes can be made wherever necessary to haul any kind of a load, and the conversion can be made very quickly. The bodies are well within the limits of weights recommended by the S. A. E. and are so built that they will endure rough use and hard work.

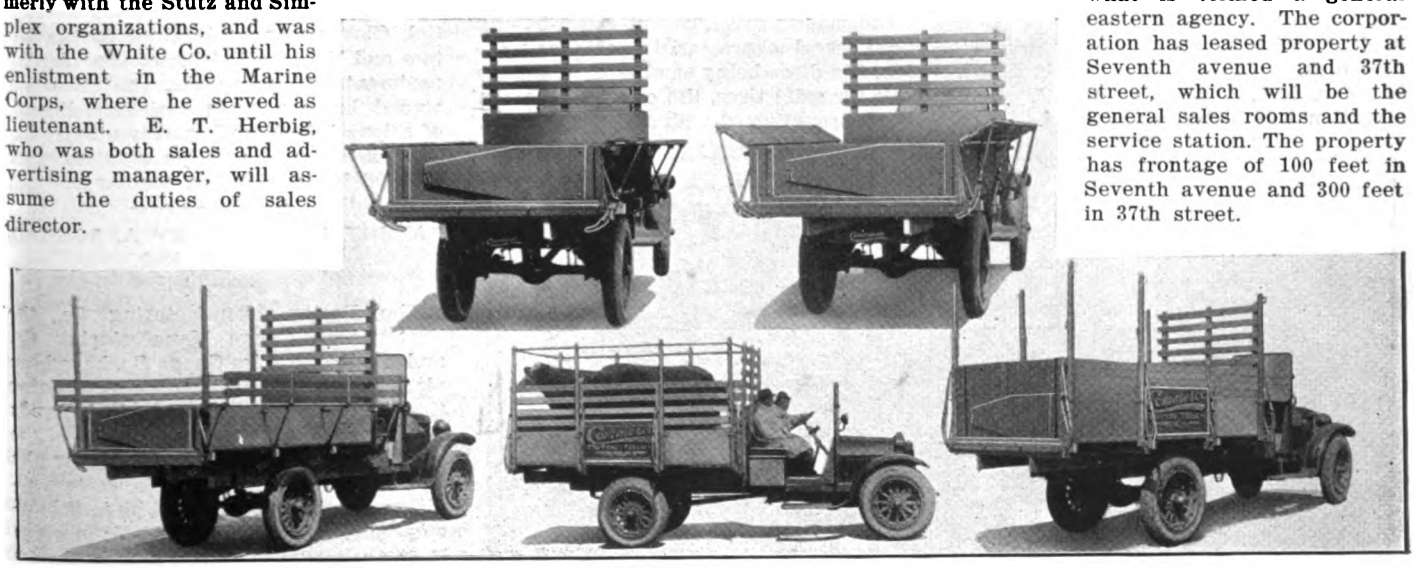
All the sills, floor boards, slats and stakes are well seasoned oak. The joints in the floors are tongued and grooved and the panels are rabbeted into the floor. All the joints are made with white lead. The body is claimed to be perfectly grain tight and will not absorb moisture. All the reinforcements are designed to have maximum strength with minimum weight.

As a stock rack body the slatted racks are held by outside stakes, the tops of which are 60 inches height and fitted with metal loops for securing them with a rope, this being an effectual barrier for cattle. The water tight body may be washed as necessary. As a high grain body the sides are extended 12 inches above the height of the standard side boards. As a low grain body the flare boards are placed at an angle of 30 degrees to carry bulky loads such as loose or sacked grains, baled hay or barrels. When the stakes are not needed they are stored in a compartment under the rear of the body. As a basket rack vertical extensions 12 inches high are attached to the flare boards for hauling fruit or vegetables, baskets or crates, or the flare boards may be dropped horizontal and the vertical extensions placed to form backs, the boards serving as seats for passengers. The flare boards are adjustable to any angle from horizontal to perpendicular. As a hay rack the flare boards are set at 90 degrees from the panels and on this body a very large load can be piled. The dropping of the Comstock gate increases the body length.

These bodies are now used as regular equipment for Commerce trucks, the Commerce Motor Car Co. being the first manufacturer to adopt it as standard. A one-ton Commerce chassis with this body and solid tires sells for $1725, a 1½-ton chassis with 35 by five-inch pneumatic cord tires for $1850 and a two-ton chassis with 36 by six-inch pneumatic cord tires for $2120.

R. E. TAYLOR MOTOR CORPORATION IS NEW YORK SIGNAL AGENT.

The R. E. Taylor Corporation has been organized in New York City to distribute Signal trucks through a territory that includes New York, New Jersey, Pennsylvania, Delaware and Maryland, having what is termed a general eastern agency. The corporation has leased property at Seventh avenue and 37th street, which will be the general sales rooms and the service station. The property has frontage of 100 feet in Seventh avenue and 300 feet in 37th street.



The New Everyway Convertible Body on a Commerce Truck: Upper Left, with Flareboards Dropped to Use for Carrying Loose Hay; Upper Right, with Flareboards at 30-Degree Angle for Bulky Loads; Lower Left, with Racks on Flareboards for Carrying Baskets, Crates, Etc., the Flareboards Serving as Seats for Passengers; Lower Center, Equipped with Stakes and Racks for Cattle Haulage; Lower Right, Side Racks Lowered to Increase Height for Grain Loading.

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FRUEHAUF TRAILER CO. WILL BUILD NEW FACTORY.

The Fruehauf Trailer Co., Detroit, has purchased a five-acre tract of land at Harper avenue and the Detroit Terminal Railway, about two miles distant from the present works, on which a new plant will be built. The property has about 200 feet frontage, is about 350 feet wide at the rear and extends along the railroad about 850 feet.

On this buildings will be erected that are expected to be ready for occupancy in the autumn and the purpose is to equip the plant with reference to time and labor saving and to have conditions that will contribute to the efficiency and comfort of the employees. The equipment of the present factory will be removed there and will be considerably increased.

The company plans to increase its capital from $150,000 to $250,000. The concern was established about five years ago, being the outgrowth of the wagon truck business of A. C. Fruehauf. It first manufactured heavy duty semi-trailers and now builds semi-trailers from two to 10 tons capacities and four-wheel trailers from 1½ to five tons capacities.

Fruehauf trailers are now sold in nearly all commercial centers in the United States and in some places in Canada. There has been a considerable demand from foreign countries and recently one order from Norway was for 12 semi-trailers of a single model. Shipments have been recently made to the Dutch East Indies, Mexico, Cuba, Trinidad and British and Dutch Guiana. The officers of the company are A. C. Fruehauf, president; H. C. Fruehauf, vice president and general manager, and E. L. Vesler, secretary and sales manager.

GRIP NUT COMPANY WILL BUILD NEW PLANT.

The Grip Nut Co., Chicago, Ill., is to erect a new building and has purchased 250,000 square feet of land between Western avenue and the Baltimore & Ohio terminal, upon which it will build a plant with equipment costing $500,000. The company now has plants in South Whitley, Ind., and Columbus, O. Construction will begin immediately.

Clark Steel Wheels for Pneumatic Truck Tires

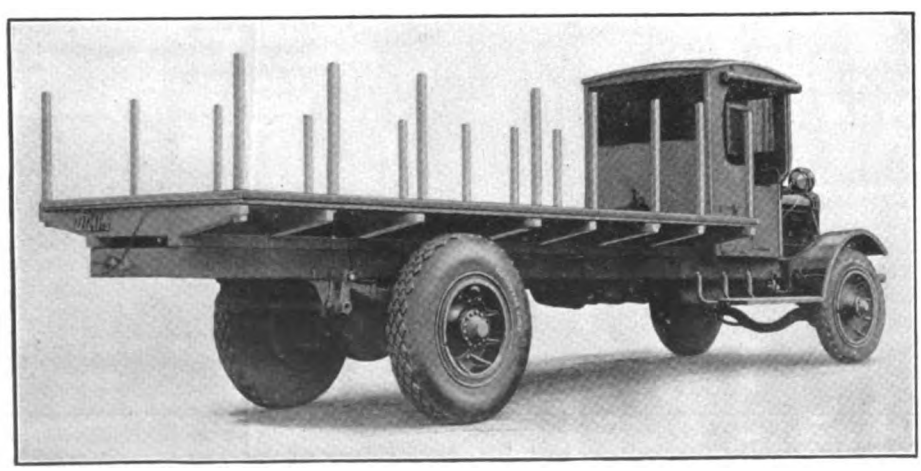
To meet the demand created by the constantly increasing use of pneumatic tires on power trucks, the Clark Equipment Co., Buchanan, Mich., manufacturer of disc steel wheels and internal gear driven axles for trucks, has designed and is now producing commercially a new type disc steel wheel that is claimed to have unique advantages when compared with other wheels.

Among the claims of the manufacturers for the superiority of steel wheels is that they are not affected by climatic or weather changes, that they cannot be sprung so they will be out of true and wear the tires excessively, and that the tires cannot creep. There are other qualities claimed for the use of pneumatic tires, which include decrease in fuel consumption, greater traction, less wear of roads, less fatigue for the driver, greater general efficiency of the machines, minimized breakage of freight, lessened mechanical deterioration of the vehicles and greater speed.

With trucks of load capacity of less than 2½ tons road speed is an important factor and one object of manufacturers, engineers, owners and drivers is to do work more rapidly. The one possibility for economizing time is driving faster. Claim is made that this is only practical with pneumatic tires, and that this time economy more than offsets the increased cost of the shoes.

Pneumatic tires in large sizes weigh heavily and handling them outside of a garage or service station, so that there shall be minimum delay in the event replacement is necessary, is of prime importance. The Clark company's engineers have had the cooperation of the large tire companies and claim is made that with the new wheels tires can be handled quickly if a change is necessary on the road.

The wheels are different sizes, having the general characteristic of Clark design, the discs being smaller than wheels built for solid tires, the offset of the rim being strengthened with a series of webs. In each wheel there is a slot extending from the outer edge of the rim to the center to take the valve stem, this slot being reinforced with strong webs at either side. With this construction adapted for either demountable or detachable rims removal or replacement of the tire, even to weights up to 250 pounds, can be done by one man. The same construction can be used for wheels of all sizes and the wheels as built are suited for all makes of tires.



Truck Equipped with the New Type Clark Steel Disc Wheels Designed for Use with Either Demountable or Detachable Pneumatic Tires.

ADDITIONAL BUILDINGS FOR THE SAMPSON TRACTOR.

The Sampson Tractor Co., Janesville, Wis., a member of the General Motors group, will build a complete foundry unit, 300 by 500 feet, and also a steam generating plant and boiler house. The first unit was completed early in March and the second unit of equal size will be ready shortly. Ground has been broken for the casting plant.

A. D. King of Flint. Mich., has assumed general charge of the Sampson operations as factory manager. He comes from the Chevrolet division of the General Motors organization. His first entry into the automotive industries was with the old Leland-Falkner Co., now the Cadillac. He later spent six years with Ford and then went to Maxwell as general superintendent. Three years ago he became motor production manager of the Chevrolet plant.

COL. GLOVER TO JOIN TIMKIN ORGANIZATION.

Announcement is made by the Timken-Detroit Axle Co., Detroit, that Col. Fred Glover will join the organization Aug. 1 as assistant general manager. Col. Glover from 1907 to 1912 was general manager for the Gas Traction Co. of Minneapolis, and when that company was purchased by the Emerson-Brantingham Co., in 1912, he was elected vice president and served in that capacity until he resigned in Dec. 1917, to enter the army service. Col. Glover was made chief of the Motors and Vehicle Division of the War Department and when the armistice was signed he was made assistant director of sales of the War Department. He has been discharged and his services were secured by the Timken company.

PATENT SUIT WON BY A. SCHRADER'S SON, INC.

The Protex Manufacturing Co., the Protex Tire Gauge Manufacturing Co. and the Protex Tire Gauge Co. have been placed under an injunction restraining them from selling the so-called Protex gauge and Rex gauge by an order of the United States District Court for the Northern District of Illinois, eastern division. Action was brought by A. Schrader's Son, Inc. of Brooklyn, N. Y., in which it was claimed that these gauges were an infringement of the principle and mechanism of the Twitchell gauge, which is now being manufactured by that concern.

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"POWRLOK" LOCKING DIFFERENTIAL GEARSET.

The Powrlok Differential Gearset, built by the Powrlok Co., 1107 East 152nd street, Cleveland, O., and constructed in bevel gear and pinion types for light cars and worm shaft and worm wheel for trucks, is maintained by the manufacturer to insure positive traction at all times for the vehicles. Claim is made that the power is applied to both wheels of an axle, no matter what the condition of the surface, so that there is always tractive effort. The design of the gearset differs from the bevel gear and pinion type in that worm pinions are used, and while the vehicle can be driven backward there cannot be a condition where both wheels will not have traction. A mechanical description of the gearset, with an illustration indicating the parts referred to in it, is appended:

Intermeshing with each of the gears (14) and (16) is a pair of 45-degree spiral gears (24) which are journaled on pins (26) carried by the housing (20). These gears (24) are positioned at diametrically opposite points with reference to the gears (14) and (16) with which they mesh, and these gears (24) also mesh with radially arranged 45-degree spiral gears (28) journaled at their opposite ends in the housing (20). It will thus be seen that the gears (28) also move with the housing and that each gear cooperates with one of each pair of gears (24) meshing with the gears (14) and (16).

When the housing is turned by the engine drive through the master gear, the gears (24) and (28) have no rotary movement about their own axis so long as the car is traveling in a straight line, but lock together by a thrust lock and merely revolve about the axis of the shafts (10) and (12), thereby rotating the gears (14) and (16) and turning the wheel shaft or axle. When, however, the car deviates from this straight line movement so that the gear (16) of the outside wheel will turn more rapidly than the housing, this acceleration will be compensated for by a corresponding retardation in the movement of the inner gear (14) of the inside wheel. This is accomplished by turning the gears (24) and (28) connecting the gears (14) and (16) and so arranged that forward movement of one of said gears (14) and (16) tends to effect a backward movement of the other, as will be observed by the arrows indicating the relative turning movements of the different gears, all this taking place while power is being continuously applied to both wheels. In other words, while power is transmitted equally from the engine drive to both wheels, the retarding wheel while making a turn, thrusts power to the advancing wheel in exact proportion to the radius of the turn.

"An advantage of immense importance which this construction has over the ordinary differential gearing lies in the fact that power is continuously applied to both wheels, either of which may be driven regardless of whether or not the other has lost its tractive force. In ordinary differential gearing, when traction of one of the wheels of the car is lost, as in encountering a slippery piece of ground, the car cannot move on because each wheel depends upon the other as its fulcrum of resistance. In the present structure by interposing the system of spiral gears (24) and (28) between the gears (14) and (16), power is transmitted to each wheel equally under all circumstances, and should either wheel have lost its traction, the arrangement of the intermediate gearing is such as to form a lock against turning, and still afford a fulcrum of resistance sufficient to maintain the traction of the other wheel."

It has been proved by tests at the factory that the maximum power is delivered to the inside wheel when the car or truck is rounding a corner, as this is the wheel that travels the shortest distance and has the greatest road resistance. As a consequence, the differential delivers the power to this wheel; further, the power is not delivered in a reverse direction. This claim is proven by the fact that if an attempt is made to turn one of these wheels backward by hand while the power is applied, one will note that this cannot be done.

NEW SALES PROMOTION HEAD FOR REO.

E. B. McCoy, for two years advertising manager of the Olds Motor Works, has been made head of the sales promotion department, a new division of the organization. The advertising department is now in charge of L. S. Roscoe, who was formerly assistant to Mr. McCoy. L. E. Curphey has succeeded Fabio Sergardi as chief engineer for the company.

MEERS RESIGNS AS PANHARD SALES MANAGER.

I. B. Meers has resigned as general sales manager of the Panhard Motors Co., Grand Haven, Mich. He has not as yet announced his future plans.

BENEKE & KROPF MFG. CO. SUCCEED OLD RAYFIELD CONCERN.

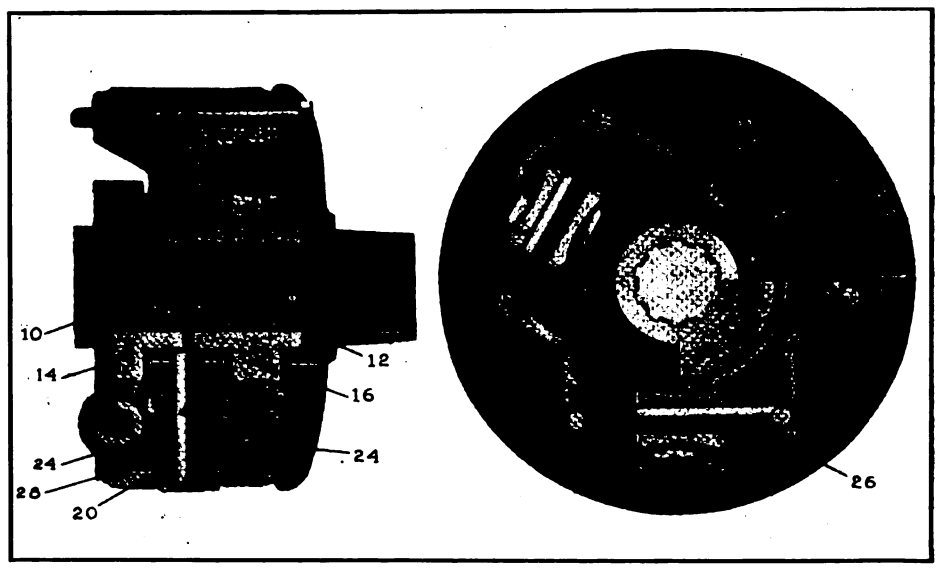
Beneke & Kropf Manufacturing Co. has succeeded the Findeisen & Kropf Manufacturing Co., Chicago, manufacturer of Rayfield carburetors, and the new company has planned extensive changes in its products and production methods. Henry Beneke, who was vice president of Hibbard, Spencer, Bartlett & Co., a leading hardware firm, with which he was associated for 27 years, has purchased the interest of Frederick Findeisen and has become vice president and treasurer of the company. O. F. Kropf, widely known as a producer of high grade carburetors, remains with the reorganized company as president and E. A. Bates continues with it as director of sales and advertising.

With new capital the plant and equipment are being expanded to meet the requirements for producing in larger volume and besides new machinery, tools and dies important changes have been made in the engineering and manufacturing staffs. One work under way is a complete rerouting of the manufacturing processes to increase the efficieney of the shops. The expansion planned is expected to more than double the capacity of the plant.

As an example of what is being done to improve the carburetors they are now subjected to three searching tests before they are passed to the sales department, the one for gasoline leaks, the second for vacuum and the third for operation by testing on a gasoline engine.

TWEEDY WITH DRYDEN RUBBER CO.

O. S. Tweedy, for a score of years associated with the tire industry, formerly with the Diamond Rubber Co., and for 10 years with the United States Tire Co., who has been recently connected with the L. A. Young Industries, Inc., of Detroit as vice president, has resigned to become vice president of the Dryden Rubber Co., Chicago.



Cross Sections of the Powrlok Differential Gearset: At Left, Detail of Gear and Pinion Assembly; at Right, Transverse Exposure to Show Location of the Components.

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EXPORT GROUP ADVERTISING

By P. S. Steenstrup, General Manager, General Motors Export Co.

THE passing of the Creel Bureau on July 1 marked the end of the official activities of our government in promoting American publicity in foreign fields. Shall private enterprise continue the work which our government found desirable and effective in giving our overseas friends a better conception of our ideals, purposes and activities during the war period, or shall we grant foreign competitors the exclusive use of the power of "group" or "pool" advertising in foreign fields?

The value of this and other forms of publicity in the United States is generally recognized. The growth of advertising of all kinds since the armistice has been remarkable. One prominent American publisher is reported as having rejected millions of dollars worth of advertising because his printing equipment was inadequate to handle the large volume of business offered.

Never before in the history of American business has the power of publicity been so generally acknowledged or so liberally employed in the United States. Even the government has shown its acknowledgment and appreciation of the excellent results accomplished by advertising during the war by recently expending with satisfactory results $184,352 in a campaign for recruits for our new army.

Foreign Possibilities Not Realized.

Unfortunately, the very general recognition by American business men of the power and effectiveness of advertising in this country has not brought a correspondingly greater appreciation of the possibilities of advertising in the overseas field. True, a few of our larger manufacturers are conducting rather extensive overseas campaigns, and the American export publications have recently enjoyed considerable increase in their advertising patronage, but few concerted efforts have been made by large advertisers or groups of advertisers to systematically and intensively develop the foreign field.

The possibilities of "group" advertising, sometimes called "pool" advertising, a plan offering great possibilities for promoting the sale of and building good will for American products abroad, seem to have been entirely overlooked by American manufacturers, although this method of building good will and developing business for certain industries is already extensively and effectively employed by British advertisers. That other countries are awakening to the appreciation of the possibilities of this form of advertising is proved by the fact that Brazilian coffee growers recently started an advertising campaign in this country, backed by an appropriation of $1,000,000 to increase the demand for and consumption of their product.

Value of Plan Well Demonstrated.

The value and effectiveness of "group" advertising in this country have been amply demonstrated. The Hawaiian pineapple, Sunkist and Skookum campaigns are outstanding examples in the food product line; cypress and southern pine campaigns have done much to increase the sale of these two kinds of lumber, while magnetos, ball bearings and wood wheels are a few of the lines connected with the automotive industry which have recently been the subject of "group" advertising campaigns.

If "group" advertising can be effectively and profitably employed to increase the demand for and the use of certain products in this country, why should it not be even more effective in promoting the sale of American products abroad? American products will not only encounter world competition in the foreign markets, but in certain sections of the globe more or less well defined prejudices exist against American products and American methods. What more effective method could be used to overcome these sales impediments than good "group" advertising?

But it is not only in opening new markets and correcting existing misconceptions regarding American products and methods that "group" advertising can be profitably employed. It should be equally effective in increasing the demand for and sale of established lines. To get a better conception of the possibilities of this form of advertising in the overseas field, let us examine the ways in which it could be profitably employed to promote the use of and demand for products of a certain specific industry—the automobile industry, for example.

Sales Possibilities Not Exhausted.

American motor cars are today sold throughout the civilized world and marketing methods both in this country and abroad are probably as aggressive and modern as those employed in any other industry, but does anyone imagine that with more than 6,000,000 cars in use in the United States and considerably less than 1,000,000 in the rest of the world, the sales possibilities for American cars abroad have been exhausted, or that the 100,000 or more cars which will be exported this year will fully satisfy the potential overseas demand?

The motor car business overseas is in its infancy and the rapidity and extent of its development will depend largely on the employment abroad of those aggressive publicity and sales methods which have been so successful in building the business in the United States to its present huge proportions. The possibilities of a "pool" advertising campaign abroad to increase the use of American motor cars are alluring. The field is the largest ever presented to an advertising man and the purpose is to increase the usefulness, the wealth and the happiness of the people of the entire world through rapid, economical transportation. It will require a man of large vision, wide experience and of great ability to direct such a campaign in a way to obtain maximum results, but the scope of the campaign should be ample and the reward sufficiently great to satisfy the ambition of any man.

Campaign Should Be on Broad Lines.

The campaign should be conceived and planned along the broadest possible lines. Its object should be to increase the use of motor cars, American motor cars primarily, but all cars of merit wherever manufactured. The copy should be largely educational. American production methods should be explained and the reasons why American manufacturers can produce such good cars to sell for so little money should be clearly outlined to the foreign buyer.

The copy would necessarily be as varied as the conditions existing in the different countries in which it is to be used, and a careful study of local habits and customs and an analysis of trade conditions and methods would be essential before the campaign was planned, but the type of copy used to sell motor cars in this country five or more years ago would be well suited for use in most foreign territory except possibly in the European countries, in some of which the motor car business is rapidly approaching the stage of development reached in the United States.

The social, health and business advantages accruing from motor car ownership should be emphasized and every effort should be made to convince the overseas prospect that the motor car is the profitable and essential utility which it is now commonly accepted as being in this country.

Foreign Language Editions Needed.

But a broadly conceived "pool" advertising campaign in the foreign field should include more than paid advertising and publicity in existing foreign publications. A strong American motor publication designed especially for the overseas trade with editions in English, Spanish, Portuguese, French and Dutch should be started and would undoubtedly receive the hearty support of American manufacturers of automotive products. Trade publications in the overseas field should be encouraged and supported by overseas distributors of American cars in cooperation with the American manufacturers of the cars which they market. Good roads should be agitated and encouraged in every way possible and motor car dealers throughout the world should be made to realize that better roads mean increased sales of motor cars.

The possible ramifications of a "pool" advertising campaign are almost unlimited and it would be difficult to outline them fully and clearly without giving separate consideration to almost every civilized country in the world. However, those familiar with overseas trade conditions and the lack of concerted advertising effort of American advertisers will appreciate the wonderful possibilities of a campaign of this kind.

A "pool" campaign could be supported by placing a uniform assessment on each car exported or by taking a percentage of the net value of each car exported for the advertising fund. The benefits from

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the campaign accruing to each manufacturer would be in proportion to the number of cars which he exported and to his share in the cost of the campaign, while the industry as a whole would be greatly benefited.

Some day when our prominent advertising agencies work out from under the deluge of American advertising which they are now placing in the publications of this country, they will find time to develop for some of our important and representative industries "pool" campaigns, which will give a wonderful impetus to the American export business. In so doing they will perform a service to American industry and the American people surpassed only by the great service rendered our nation by advertising men during the war.

CLIFTON AGAIN PRESIDENT OF N. A. C. C.

Col. Charles Clifton of the Pierce-Arrow Motor Car Co., was unanimously chosen president of the National Automobile Chamber of Commerce at a meeting of the board of directors held at Buffalo, July 16. The administrations of Col. Clifton have been so satisfactory that so far as the executive is concerned the election is largely a matter of form. The other officers, re-elected to succeed themselves, were: Hugh Chalmers, Chalmers Motor Co., first vice president; Roy D. Chapin, Hudson Motor Car Co., second vice president, passenger car division· Windsor T. White, White Co., second vice president, motor truck division; C. C. Hanch, Maxwell Motor Co., secretary, and H. H. Rice, Chevrolet Motor Co., treasurer.

MCGEE-WHITE CORPORATION TO DISTRIBUTE BODIES.

The McGee-White Corporation has been organized at Minneapolis, Minn., with J. J. White of Fargo, N. D., as president; A. N. Paulsrud, vice president; M. Leron, secretary, and R. B. McGee, formerly manager for the Schurmeier Body Co., St. Paul, Minn, treasurer and manager. The company has arranged for the exclusive distribution of Field truck bodies, built by the Field Manufacturing Co., Owosso, Mich.

Body Builders Form the Martin-Parry Corporation

The Martin Truck and Body Corporation, York, Pa., and the Parry Manufacturing Co., Indianapolis, Ind., have been merged and the Martin-Parry Corporation organized, which is, according to those concerned, the largest enterprise in the world engaged in the production of vehicle bodies.



F. M. Small, President of the Martin-Parry Corp., York, Pa., and Indianapolis, Ind.

Both concerns have been long established, are widely known and have been very successful. The Parry company, claimed to be the largest producer of bodies in America, it being developed from the manufacture of animal vehicles, and the Martin company was believed to be the oldest and strongest in the body industry, having adapted its facilities for truck body production. Both have large and well equipped plants. The consolidation is expected to increase the output of both plants and lessen manufacturing costs. Estimate is made that the combined production the first year will approximate 60,000 bodies.

The president of the company is F. M. Small, former president of the Martin company, who is credited with originating standardization of truck bodies and the progressive assembly of the products. The directors and officers are: Chairman of the board of directors, John J. Watson, Jr.; vice president, treasurer and director of the International Agricultural Corporation; Guy E. Tripp, chairman of directors, Westinghouse Electric and Manufacturing Co.; F. M. Small; Robert I. Barr, vice president Chase Securities Corporation; James F. Shaw; S. E. Parry, former president Parry Manufacturing Co.; Walter R. Herrick and George H. Walbridge. The directors elected these officers: John J. Watson, Jr., chairman; F. M. Small, president, and Henry Hopkins, Jr., secretary and treasurer.

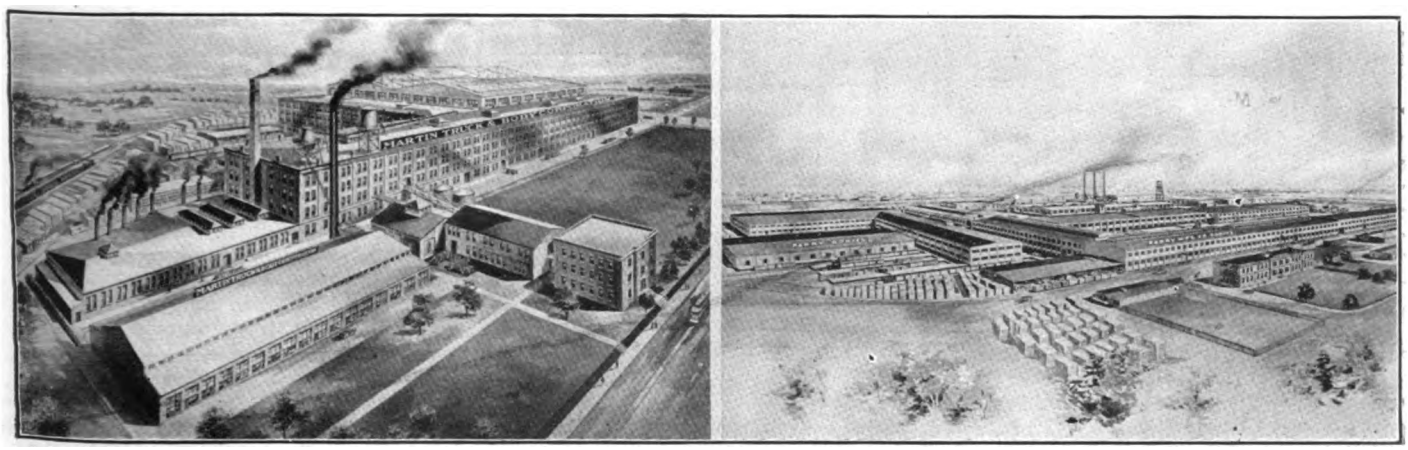
The operation of the two plants will be continued without competition and to obtain all practical economies. Large stocks of bodies will be carried and distribution will be to better serve buyers from the nearest plant. By inter-factory shipments either plant can do work now done by one. The expectation is by further standardization the total output will be doubled.

CHANGES IN GMC TRUCK OFFICE STAFF.

Changes in the staff of the General Motors Truck Co., Pontiac, Mich., have been made. H. L. Hurst, who has been comptroller, has become assistant to General Manager W. L. Day. W. H. Maybury, who was assistant comptroller, has become comptroller. J. A. Murray, who was purchasing agent, has been advanced to assistant to Mr. Hurst and H. J. Chrichton, who was assistant purchasing agent.

REPUBLIC SALES MANAGER FOR SOUTH AMERICA.

Charles Melhado, who has been with the Republic Motor Truck Co. for four years, has been appointed sales manager for South America and the West Indies. He has left for a trip through South and Central America.



The Works of the Martin-Parry Corp.: At Left, Plant of the Martin Truck and Body Corp., York, Pa.; Shops of the Parry Manufacturing Co., Indianapolis, Ind. Merger of These Concerns Created the Largest Body Building Enterprise in World.

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BASIC FREIGHT RATES FOR TRUCKS

By R. E. Fulton, Vice President, International Motor Company.

IN HANDLING freight by motor trucks two principles are involved: First, service; second, cost. Every question in connection with the use of motor trucks falls under one or the other of these heads.

In comparing railway freight charges with motor truck freight charges it is necessary to include all the incidental items of expense connected with them.

Sometimes manufacturers figure that a railway freight rate of 50 cents per 100 pounds is cheaper than a motor truck freight rate of 75 cents per 100 pounds between the same points. In the freight rate of 50 cents all the expense of making the shipment, starting with the boxing or packing cost, and all other expenses incurred until delivery is made to the receiver in good order, have been overlooked.

The general traffic manager of one of the largest manufacturing concerns in the United States figured out what it cost to ship freight by railroad and by motor truck between various eastern points. In railway freight cost he included the first class freight rate, by which their goods would have to be shipped, plus 15 cents per 100 pounds teaming charges from shipper's warehouse to freight house, plus 15 cents per 100 pounds teaming charge from freight warehouse to receiver's warehouse, plus 24 cents per 100 pounds increased cost of boxing to cover shipments on account of increased weight caused by increased boxing.

Without including several other items of expense, this gave the following table of comparative freight rates per 100 pounds:

From	To	Via Fght.	Via Motor Tck.
Yonkers	New York	$1.04	$.20
New York	Newark	.91	.15
New York	Passaic	.91	.18
New York	Paterson	.91	.20
New York	Elizabeth	.91	.20
New York	New Brunswick	.91	.40
New York	Trenton	.98	.60
New York	Philadelphia	1.02	.80
New York	Chester, Pa.	1.05	1.00
New York	Wilmington	1.13	1.20
New York	Coatesville	1.15	1.05
New York	Port Chester	1.02	.63
New York	Greenwich, Conn.	1.02	.63
New York	Stamford, Conn.	1.03	.65
New York	Norwalk, Conn.	1.06	.68
New York	Bridgeport	1.10	.70
New York	New Haven	1.13	.73
New York	Derby, Conn.	1.13	.73
New York	Ansonia, Conn.	1.13	.73
New York	Shelton, Conn.	1.13	.73
New York	Naugatuck, Conn.	1.15	.74
New York	Waterbury	1.16	.75
New York	Meriden, Conn.	1.16	.75
New York	Hartford, Conn.	1.21	.90
New York	Springfield, Mass.	1.25	1.00
New York	Holyoke, Mass.	1.25	1.10
New York	Worcester, Mass.	1.31	1.50
New York	Boston, Mass.	1.36	1.50
New York	Providence, R. I.	1.32	1.10

In addition to this, it is necessary in practically every case to prepare material for freight shipment in an entirely different way than when it is shipped by motor truck direct from shipper to receiver. There is a considerable additional expense for crating, or to protect by other means to prevent loss or damage in transit. This extra expense is necessary because of the number of handlings less than car load shipments received at the hands of the teamsters and carriers after the material leaves the shipping department.

This increased protection and expense can be greatly reduced if shipments are made by motor truck, as the packages only need protection for loading at shipper's warehouse, in transit without transfer, and unloading at receiver's warehouse. Then in shipping by motor truck, instead of by rail, a great amount of clerical work in the form of extra bookkeeping, billing, etc., is eliminated. Where extra packing is necessary extra room is required for the boxing department. Then if railway freight shipments are delayed there is the additional trouble of tracing them. If the shipment arrives in damaged condition there is the further difficulty of collecting from the railroad company.

Contrasted to this is the example of Marshall Field & Co., which guarantee to make delivery within 50 miles of its Chicago store within 24 hours, so well is its motor transportation system organized.

Boxing often carries from 10 per cent. to 20 per cent. of its weight in moisture, unless it is kiln dried prior to boxing.

The Otis Elevator Co., Yonkers, N. Y., estimated that by the use of motor trucks it saves more than $100,000 a year in lumber alone.

Delivery time is all in favor of the motor truck and if manufacturers will take into account all the various costs and charges which are part of true freight transportation costs, they will find that motor trucks can be operated successfully and economically in competition with railways for distances between 10 and 125 miles.

In figuring the cost of operating trucks there are many faulty systems in use. These systems overlook many little items which find their way into the expense account and often cause considerable loss to the operator who overlooks them. The following table gives items of cost which must be determined upon the basis of size of truck, miles traveled and tonnage hauled:

Assumption: Working days per year; miles per day; miles per year; miles life of car.

Investment: Chassis with standard equipment; body.

Fixed charges: Interest on investment; insurance; fixed depreciation (exclusive of tires); wages; garage rent.

Operating charges: Maintenance; tires; gasoline; oil and grease.

Total cost per annum.

Total cost per day.

Total cost per ton mile.

Often trucks will do unusual mileage at surprisingly small costs for repairs. We frequently get letters about Mack trucks that have given exceptional service. One of these unusual cases is that of the two-ton Mack operated by M. Mauro of Plainfield, N. J., which has traveled 45,000 miles with practically no expense for repairs. Another Mack in the service of the List Brewing Co. of Plattsville, Wis., has traveled 30,000 miles and the only repair expense incurred was $65 on account of the driver allowing the motor to freeze last winter. Such remarkable service as this cannot always be expected; but these instances serve to show the possibilities of a good truck if given reasonable care.

WHITE CO. ON LONG ISLAND.

The White Motor Co., is erecting a combined sales and service station at Long Island City, N. Y., for the better handling of its products. It is planned to employ 400 to 500 persons. The New York headquarters, at Park avenue and 57th street, New York City, will be given up about Dec. 1, when the new building is expected to be ready for occupancy.

PROMOTION FOR C. W. JINNETTE.

The Norton Co. of Worcester, Mass., will have C. W. Jinnette in charge of its new Detroit branch office. Mr. Jinnette has been Detroit representative of the company for a number of years.

GMC STOCK IN GREAT DEMAND.

Thirty million dollars of debenture six per cent. stock of the General Motors Corporation, issued under the new capitalization of $1,020,000,000, has already been sold, the distributing syndicate announced recently. The transaction added approximately 6000 shareholders to the GMC list, a fair share of whom are Europeans.

NEW ADDITION TO NASH PLANT.

The Nash Motors Co., Kenosha, Wis., recently awarded contracts for the construction of a one-story building, 100 by 200 feet, which will cost about $75,000, with equipment.

JEANNIN ELECTRIC CO. IS FORMED.

The Jeannin Electric Co., of Columbus, O., has been incorporated with C. H. Clement, formerly with the Bock Bearing Co., as president and treasurer. The company will manufacture electric motors. H. W. Jeannin is vice president and Morton C. Seely is secretary. The company is incorporated for $150,000. A factory will be built having a capacity that is estimated at 100 motors daily.

OWOSSO IS TO HAVE A FOUNDRY.

The Owosso Bronze Bearing Co., Owosso, Mich., is to break ground soon for the construction of a new foundry, 40 by 100 feet.

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BILL WOULD MAKE TRUCK TAX THREE PER CENT. FLAT.

Congressman Kraus of Indiana has introduced a bill in the House of Representatives to amend the war revenue law with reference to section 900, which provides that this section shall specifically apply as follows:

(1) Automobile trucks, automobile wagons and chassis thereof (including tires, inner tubes, parts and accessories therefor, sold on or in connection therefor, or with the sale thereof), 3 per centum.

This is intended to specifically define the manner of taxing trucks, truck chassis, truck bodies, accessories, parts or equipment. The present law differentiates between trucks without bodies sold by manufacturers and equipped with bodies by truck manufacturers' agents, or equipped by body builders to order of the chassis owner.

The interpretation of the law is by the internal bureau of the Treasury Department and is and there has been controversy between the bureau and the National Automobile Chamber of Commerce and the National Automobile Dealers' Association to bring about an interpretation of the law so that the sales unit will be a chassis and not a chassis equipped with a body.

SPECIAL SHIP TO CARRY AUTOMOBILES.

The Detroit and Cleveland Navigation Co., with offices in Detroit, Mich., is making plans for the construction of a fast steam boat to carry passenger cars, trucks, tractors, automotive supplies and implements to any point on the lakes.

It will be 300 feet by 75 feet, having two decks with two set of elevators and will have capacity for 275 automobiles. The ship will have no definite schedule and its movements will be governed chiefly by the needs of the automobile shipments. Other freight will be accepted whenever possible.

GUILD NEW SECRETARY FOR WAYNE COUNTY.

Charles G. Guild has been appointed secretary for the Wayne Oil Tank and Pump Co., Fort Wayne, Ind., to succeed Clayton O. Griffin, resigned, the office carrying with it the duties of service manager. Mr. Guild was with the Burlington Wheel Co., Burlington, Ia., as manager, and previously was manager for the Jenny Electric Light and Power Co. of Fort Wayne, continuing with the General Electric Co. after that concern absorbed the Jenny company. He went to the Burlington Wheel Co. in 1910.

NEW TRAILERS BUILT BY THE MARTIN CO.

The Martin Rocking Fifth Wheel Co., Springfield, Mass., is building a new two-wheeled trailer model, designed to track exactly with the rear wheels of the towing vehicle. It is claimed that these vehicles have no side sway at high speed.

Semi-Trailer Body Carries Eighty Passengers

What is believed to be the largest body ever built for use with a power vehicle is a unit designed and constructed for a large oil company for transporting its employees to and from their work at Morgan, La. This is mounted as a semi-trailer on a single pair of wheels and is drawn by a short wheelbase Mack road tractor. The proportions of the body are such that it might appear from statement of dimensions that it could not be used advantageously on highways or in conditions where traffic is congested. The results are very satisfactory, however, for the machines can be handled quite as well as the much smaller types.

The body is 25 feet long, seven feet wide and six feet height, and it has windows at either side and at the front, with the entrance at the rear. There are two aisles in the body with seats on either side. The trailer and body were built by the Texas Wagon Co., Houston, Tex. The front end of the body is mounted on a tilting fifth wheel attached to the rear end of the tractor chassis.

The rear wheels and axle carrying the rear end of the trailer turn under the body like the front wheels of a wagon and are connected by an extension pipe pole under the center of the body through a universal joint with a corresponding pole from the tractor, so that the trailer wheels track with the rear wheels of the tractor. With this linkage of the wheels the trailer can be drawn around sharp turns without cutting corners and can be used wherever there is space for the tractor to move. The tractor and trailer are more than 30 feet long and can be backed perfectly.

The body is supported near the ends by swinging bolters. The draft or pull of the tractor is through two chains attached to the side members of the tractor frame and to a singletree attached to the pipe pole under the body. The draft is at the lowest practical point without being directly on the axle. When corners are turned the chains are equalized by sliding clips on the singletree to which the chains are attached.

The superintendent of the oil company states that the 'bus carries from 85 to 100 passengers and is so satisfactory he would recommend similar equipment were there need of it. Statement is made that equipment of this type could be utilized to excellent advantage where there are neither steam nor electric railroads, for the capacity is large and the operating cost relatively small.

SEATON IS HOBBS PRODUCTION MANAGER.

Prof. L. F. Seaton, for several years in charge of the mechanical engineering department of the University of Nebraska, has associated himself with the Hebb Motors Co., Lincoln, Neb., as manager of production. For five years he was in charge of automobile and tractor instruction at the university. He was previously a road expert for a thresher manufacturing concern. He is a member of the American Society of Mechanical Engineers, a member of the Society of Automotive Engineers and is first vice president of the American Society of Agricultural Engineers.

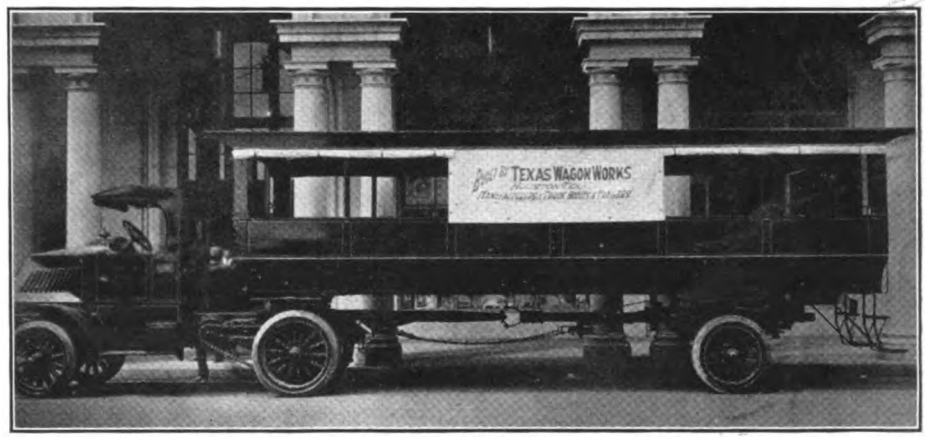
SAVOLD TIRE CORPORATION OPERATING PLAN.

The Savold Tire Corporation, which has a patented process for rebuilding tires from the inner lining to the new tread, announced recently its incorporation for $5,000,000 under the laws of the State of Delaware, and the additional formation of state corporations in New York, New Jersey and Delaware.

Starting with production in Chicago, the company has made plans for manufacture in 10 other states under a plan of selling territorial rights and leasing ovens for treating tires.

TRACTOR COMPANY REMODELING ITS FACTORY.

The Detroit Culto-Tractor Co., Detroit, Mich., recently organized to manufacture a light three-wheel gasoline farm tractor, will not be in production until September. The company recently purchased a garage and finds it necessary to rebuild it to adapt it for manufacture.



Semi-Trailer Body with Capacity for From 85 to 100 Passengers, Built to Carry Employees of an Oil Company at Morgan, La.

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TRUCK AND CAR SERVICE STATION

A Fire-Proof Single Story Structure Equipped with Every Facility, with Foundation on Which Additional Stories Can Be Built If Needed.

IN THE accompanying plan an endeavor has been made to illustrate how closely related are the garage or storage department and the service station. A service station to be ideal must have facility that is essential for serving its customers efficiently. It must be designed so that economical administration is practical.

Dimensions of the Building.

The building shown measures 100 by 100 feet and is designed to face on a main street. It is a one-story type, the entire structure being devoted exclusively to the handling of automobiles, their accessories and repairs. The general appearance of the exterior or front should add greatly to any locality and improve the valuation of surrounding property.

Directly on centre and in the front of the building is located an office for the transaction of general business. Access may be had to this office from the garage proper located at the rear, or directly from the street. Adjoining the office at the left is the wash stand, this space being less valuable than any other owing to its proximity to the large door. Oil tanks and greases will also be found at this place; their accessibility to the transient trade being a point to be considered.

Large Repair Department Provided.

The general repair department is directly at the rear, with work benches and pits for working underneath large vehicles. Tool closets are provided at the left wall of repair shop where valuable tools may be kept under lock and key at all times when not in use. Adjoining the repair shop is the machine shop, the heart of the service station, a place where parts may be repaired, or if necessary made, which should have a complete equipment of machine and hand tools.

Just in front of the repair department is situated the storage area for trucks and cars, which is 14 feet in the clear from the bottom of the beams to the floor level. In size it is approximately 30 by 100 feet, with the exception of a small space occupied by the office. This space is fully lighted and ventilated by two huge skylights as shown, measuring 16 feet by 22 feet in size. They are constructed of galvanized metal on a steel frame with ribbed wire glass. The few columns that have been used are so spaced as to minimize inside manouvering of the vehicles for positions in line.

A boiler room is reached by a flight of stairs leading from the toilet and wash room, it occupying the area beneath the stock room and toilet. Provision has been made in the washroom to meet the requirements of shop of this size with adequate equipment for all purposes. The stock-room is amply large to carry all the parts necessary for a first class shop and access is had to it from both shop and garage proper.

Slow Burning Mill Construction.

The construction planned for is the slow burning mill type, which will be found extremely satisfactory for buildings where there is more or less danger from fire hazard.

The foundation would be of concrete sufficient in size and depth to carry all loads placed upon it. Provision for future expansion can be made at the beginning or laying of the foundation at a very small cost over the original figure, which can be made sufficient in size to carry two or three future stories.

The super-structure is comprised of brick with terra cotta trimmings. As there are numerous kinds of brick and some of which may be more easily obtainable than others in different localities, no statement is made of just what the size or color of these may be, but that a brick of a hard nature be used is recommended, as the harder the brick the smaller the percentage of absorption of water, and recommendation is with the object of minimizing dampness that might result from the use of inferior products.

General Details of Finish.

Terra cotta of a glazed or dull finish may be used, or concrete stone may be substituted in its place. Granolithic floors are provided and drained as shown, laid on a bed of five-inch concrete, the finished floor being one inch in thickness, composed of a mixture of one part cement and one part sand.

The windows are of the metal sash type with wire glass, complying with the underwriters specifications and the fire laws of different districts.

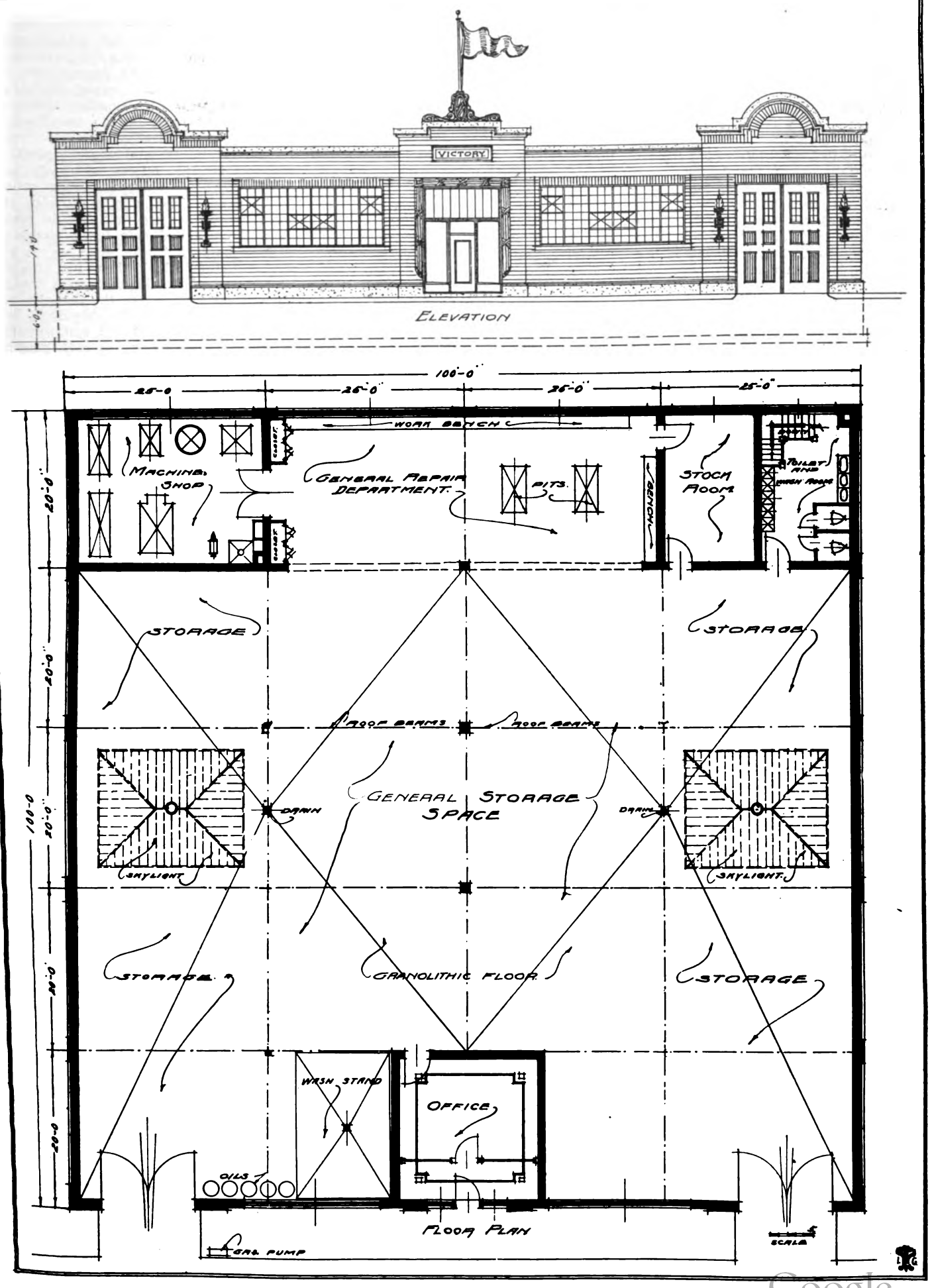
The roof is of plank supported by steel girders and wood purlins. A five-ply tar and gravel roof is advised, this having been found to give excellent results in many large manufacturing establishments.

The drainage of the roof should be given careful consideration, the roof sloping one-quarter of an inch to the front. Lead flashing should be used throughout. For heating, steam with wall radiation is advised, using the pipe system or regular radiators if the owner so desires.

The approximate cost of a building of this type would be about $15,000.

For any further details regarding this structure write to the Architectural Department of this publication.

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STEWART MOTOR CORPORATION WILL OCCUPY NEW PLANT.

The Stewart Motor Corporation, Buffalo, N. Y., will occupy a new plant Sept. 1, which is expected to have facilities for the production of 10,000 trucks a year. The new property is approximately nine acres on which are two main buildings, 121 by 500 feet and 145 by 400 feet, constructed of reinforced concrete and admirably suited for the purposes of the company. The plant is located on the New York Central Belt Line railroad and is advantageously located for receiving and dispatching large shipments. Statement is made that it is one of the best factories given over exclusively to truck building.

The growth of the Stewart company since 1912 has been very rapid. One month's production this year equaled the output for the first two years the concern was established. In 1918 the production was valued at more than $5,000,000. The company now has 345 distributing points in the United States and is represented in 27 foreign countries, including China, Japan, India, South Africa, England, France, Spain, Cuba and a number of the South American republics.

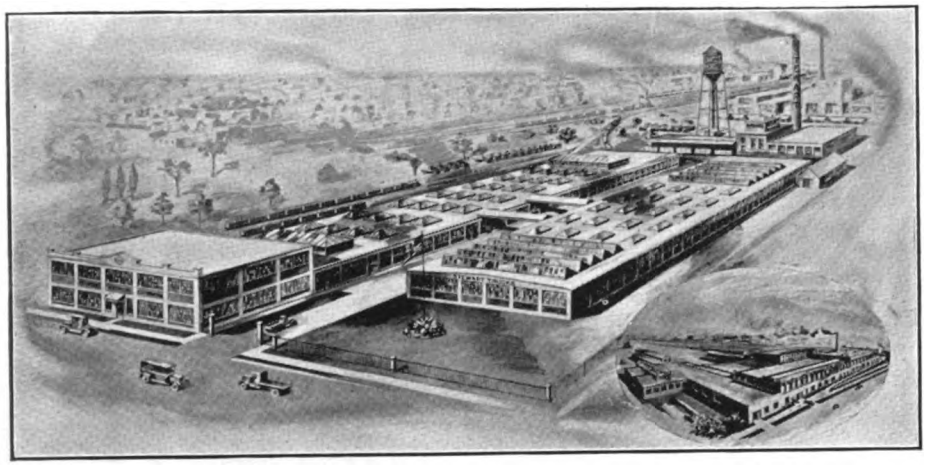
CLEVELAND STEEL COMPANIES MERGE.

The Otis Steel Co. and the Cleveland Furnace Co. of Cleveland, O., have been merged. The controlling interests of the Otis Steel Co. was purchased from British owners last May by William Salomon & Co., bankers of New York City. The merger was contemplated in connection with that purchase, but all the details of the deal were not worked out until recently.

The capital stock of the new company which will be called the Otis Steel Co., will consist of $1,850,000 of seven per cent. cumulative preferred shares having a par value of $100, and 411,688 shares of common stock with no par value.

The company now proposes to retire its existing $2,373,500 par value outstanding preferred stock; to create a new issue of preferred stock; to readjust the outstanding common stock and to enlarge its manufacturing facilities by acquiring the assets and business of the Cleveland Furnace Co., which was organized in 1902.

The consolidation will add facilities of the Cleveland Furnace Co., for making pig iron, to the plants of the Otis Steel Co., in making finished steel products. The properties of the two companies adjoin each other.



The New Plant of the Stewart Motor Corp., Buffalo, N. Y., with Capacity for 10,000 Trucks a Year, to Be Occupied About Sept. 1.

COLE IS TRAFFIC TRUCK CANADIAN REPRESENTATIVE.

E. S. Cole, for a long period with the White Co. and later at St. Louis manager for Missouri, Arkansas and Oklahoma for Little Giant truck sales, has been made Canadian sales representative for the Traffic Motor Truck Corporation, St. Louis. During the war he was instructor in ballooning for the Missouri Aeronautical Society and was stationed at St. Louis and San Antonio. He is credited with having made more balloon flights and instructing more aeronautical students than any other man in America.

NEW F. W. D. BRANCH IN MILWAUKEE.

The F. W. D. Auto Co., Clintonville, Wis., has opened a branch office, salesroom and service station at 452 Jackson street, Milwaukee, under the management of G. B. Megran.

CHRYSLER IS HURLBURT WHOLESALE DIRECTOR.

P. G. Chrysler, formerly manager of the Philadelphia branch for the Hurlburt Motor Truck Co., has been appointed director of the wholesale department for Hurlburt Motors, Inc., which is the new concern organized to take over the sale and distribution of Hurlburt trucks. Mr. Chrysler is to devote his activities for the present to the Atlantic coast states.

SCHUSTER IS M. A. M. A. ASSISTANT MANAGER.

M. Lincoln Schuster, formerly engaged in publicity and statistical work for the Treasury Department at Washington, has joined the staff of the Motor and Accessory Manufacturers' Association as general assistant to Manager Hemingway.

CRATING ECONOMY FOR OVERSEAS SHIPMENTS.

Shipments intended for export must be crated if anything like full protection is to be obtained, and experience has taught that as a rule partial disassembly is necessary or desirable that the shipping unit shall be the smallest in size that is practically possible. Packing safely and to minimum proportions can only be done by careful study with full knowledge of shipping requirements.

There are those who maintain that quite as much engineering skill is necessary to crate and ship large products, such as tractors, trucks, machinery, etc., as is required to build them, for the purpose is not only minimizing gross weight, but cubical footage, for the freight rate is based on either. If the shipment is to be hauled by railroad this conservation of space applies equally as well, and the charge will be in ratio to the care given to packing.

To illustrate the possibilities the Denby Motor Truck Co., Detroit, so packs, crates and ships its machines that six trucks, one five-ton, one three-ton and four one-ton chassis can be placed on a 40-foot flat car. In this instance bulk is minimized and the machines are thoroughly protected.

CALIFORNIA PLANT OF THE GOODYEAR CO.

The Goodyear Tire and Rubber Co., Akron, O., will break ground at Ascot Park for its new California plant. The plot covers 550 acres and will be developed with tire and cotton manufacturing factories. The plant, which is to employ about 3500 men, is to be completed this year.

The first building will employ 3000 men and will turn out an equal number of tires each day. As soon as the tire production is under way the company expects to erect a cotton factory, which will obtain its raw material from the cotton fields of the Imperial Valley and the Salt River in Arizona. Provision for housing workmen will be another feature of the project.

KELLY-SPRINGFIELD CAPITAL INCREASED.

The Kelly-Springfield Tire Co., New York City, has planned to increase its capital stock from $13,900,300 to $20,900,300. This move having been approved by the stockholders. As recently reported there will be issued $5,860,200 eight per cent. cumulative second preferred stock. The new stock is offered for pro rata subscription at $100 a share, to common and preferred shareholders of record July 17.

NEW PLANT FOR RACINE-SATTLEY COMPANY.

The Racine-Sattley Co., Springfield, O., is breaking ground for the erection of a building for the construction of gasoline engines, in which 600 men will be given employment. The building is expected to be ready for occupancy by Jan. 1.

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STATE ALLOTMENT OF ARMY TRUCKS

Washington, July 12.—The Department of Agriculture, to which was transferred by the War Department a total of 27,983 trucks, passenger cars and motorcycles, has made allotment of 11,690 of these to the different states, and this will be followed by supplementary distribution as the requisitions are received by the department and the machines are located.

The valuation placed upon the vehicles is $33,432,395. Of the total 9377 machines are new and the 2371 have been used more or less and are regarded by the appraisers of the office of sales of the War Department as being in good condition and serviceable from every point of view.

The War Department has 16,293 machines of all kinds that will be delivered to the Department of Agriculture, and assuming that all of these will be absorbed by the states, the number to be delivered to each state will be approximately one and a half times the allotment already made, and which will be specified.

In addition to the machines stated the War Department transferred 414 tractors and 1625 passenger cars of different makes, of which 1075 were Ford cars.

According to the record the trucks were 1½, two, three and 3½ tons sizes, and were equipped with standard type bodies designed for the use of the army and necessarily to obtain satisfactory results in highway construction work will have to be fitted with other bodies.

The makes of trucks and the sizes are: Kelly-Springfield, 1½, two and 3½ tons; Federal, two and three tons; International, two tons; Nash Quad, two tons; Denby, two and three tons; Moreland, two tons; Selden, two tons; Wilson, 2½ tons; Mack, 2½ tons; Gramm-Bernstein, three tons; Peerless, three tons; Republic, three tons; Standard, three tons; Velie, three tons; White, three tons.

In considering the load ratings of these trucks one must bear in mind that the army rating was from 50 to 60 per cent. of the maximum capacity established by the manufacturers. That is, a truck rated commercially at three tons was allowed half of this for army purposes, and a five-ton truck was rated as three tons for the service.

The allotment of the trucks thus far made disposes of three different lots or series, which are indicated in the accompanying tabulation as allotments one, two and three, the first and third allotments being new machines and the second used vehicles. The fourth allotment will not be made until the inventory of the remaining equipment has been completed, for the distribution is made on the basis of valuation rather than the number, which seemingly is as equitable a plan as might be devised, although this does not insure to any one state a specific number.

Of the total distribution of trucks Texas received the largest number, 699. New York was second with 594, Pennsylvania third with 548, Ohio fourth with 443, Illinois fifth with 423, Missouri sixth with 406, Michigan seventh with 346, Iowa eighth with 345, Kansas ninth with 344, Minnesota 10 with 340, Indiana and Georgia 11th with 325, Wisconsin 12th with 304, Oklahoma 13th with 297, North Carolina 14th with 275, Tennessee 15th with 269, Nebraska 16th with 255, Alabama 17th with 252, Montana 18th with 240, Virginia 19th with 236, Kentucky 20th with 233, Mississippi 21st with 213, Colorado 22nd with 209 and Arkansas 23rd with 200.

The allotment of used vehicles was interesting from the fact that Texas got the largest number, 141, New York was second with 119, Pennsylvania third with 109 and Illinois fourth with 105.

The figures of the allotment by states in alphabetical order, showing the first, second and third allotments and the total, is as follows:

State	No. 1 Allotx	No. 2 Allot2	No. 3 Allotx	Total
Alabama	116	50	86	252
Arizona	76	33	56	165
Arkansas	92	39	69	200
California	165	72	124	361
Colorado	97	41	71	209
Connecticut	34	14	25	73
Delaware	9	4	7	20
Dist. of Col.	..	..	..	..
Florida	63	28	46	137
Georgia	149	66	110	325
Idaho	68	30	49	147
Illinois	240	105	178	423
Iowa	158	70	117	345
Indiana	149	66	110	325
Kansas	157	70	117	344
Kentucky	107	47	79	233
Louisiana	74	33	56	163
Maine	52	23	38	113
Maryland	48	22	36	106
Massachusetts	81	35	61	177
Michigan	159	70	117	346
Minnesota	156	88	116	340
Mississippi	98	42	73	213
Missouri	186	82	138	406
Montana	110	48	82	240
Nebraska	117	51	87	255
Nevada	72	30	52	154
New Hampshire	22	10	16	48
New Jersey	65	29	49	143
New Mexico	89	39	65	193
New York	273	119	202	594
North Carolina	127	55	93	275
North Dakota	86	38	63	187
Ohio	203	89	151	443
Oklahoma	137	55	95	297
Oregon	88	38	64	190
Pennsylvania	252	109	187	548
Rhode Island	13	5	9	27
South Carolina	79	34	59	172
South Dakota	90	39	66	195
Tennessee	123	54	92	269
Texas	321	141	237	699
Utah	64	28	46	138
Vermont	25	11	19	55
Virginia	108	47	81	236
Washington	81	34	59	174
West Virginia	58	26	43	127
Wisconsin	140	60	104	304
Wyoming	69	30	49	148
Dept. Agricul	92	42	4	138
Totals and averages	5428	2371	3949	*11,748

xNew cars.
2Used cars.
*58 distributed twice.
Net total..... 11,690

The cars distributed number 1625, which included more than a score of makes, and the tractors were largely Holt, Gray and Cleveland machines. Of the cars Texas got 30 and a group of 58 Ford cars, Illinois drew 22 cars and 44 Ford cars, California was allotted 15 cars and 30 Ford cars and Iowa was granted 15 cars and 29 Ford cars.

In the distribution of the tractors Illinois fared the best with 99 20-ton Holt machines and Iowa received 10 Gray tractors.

With reference to the use of the machines allotted to the states statement is made that the states may utilize them or loan them to contractors engaged in doing highway construction. To what degree state owned trucks and tractors will reduce the cost of contract work is not known. In fact, it has not been studied and no intelligent answer can be given.

GILL PISTON RING DIRECTORY.

The Gill Manufacturing Co. is distributing to every garage and service station in the United States and Canada a piston ring size directory that will have a distinct value to the jobber, dealer or repairer in that it lists the size of rings needed for renewal for any make of passenger car, truck or tractor engine, which facilitates ordering and insures against delays because of uncertainty. The directory contains general instructions for fitting Gill rings and includes a code for ordering.

The directory lists between 25 and 30 branches in many of the principal cities in the United States from which rings may be ordered, these being located to afford quick service. The company is manufacturing rings, both standard and oversize, from 2½ to 7¾ inches diameter. Copies of the book are sent to the trade and copies may be obtained by addressing a request on a business letter head to the company at 351 West 59th street, Chicago, Ill.

RELIANCE TRUCK CO. CAPITAL INCREASED.

Stockholders of the Reliance Motor Truck Co., Appleton, Wis., at a special meeting approved an increase in the capital stock from $500,000 to $1,000,000, and authorized the construction of a large factory addition, which will cost $125,000. The new factory will be used both for truck manufacturing and the production of the Badger external spur gear drive axle, which the company is building.

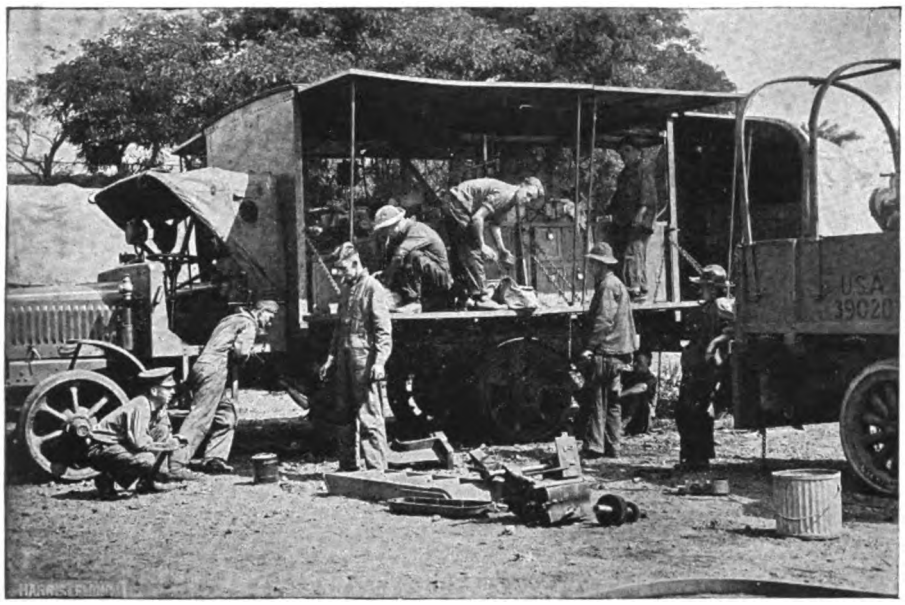
STAR TRACTOR PLANT TO BE ENLARGED.

The Star Tractor Co., Findlay, O., proposes to double the size of its plant and to erect a second plant in a western state to handle the business of that section. The company's capital stock has been increased from $100,000 to $300,000. The company manufactures the Indiana tractor.

MICHIGAN CRANKSHAFT PLANT DOUBLES EMPLOYEES.

The force of employees of the crankshaft plant at Lansing, Mich., recently acquired by the General Motors Corporation, has been augmented to meet the demand for production, the increase being from 75 hands to 200.

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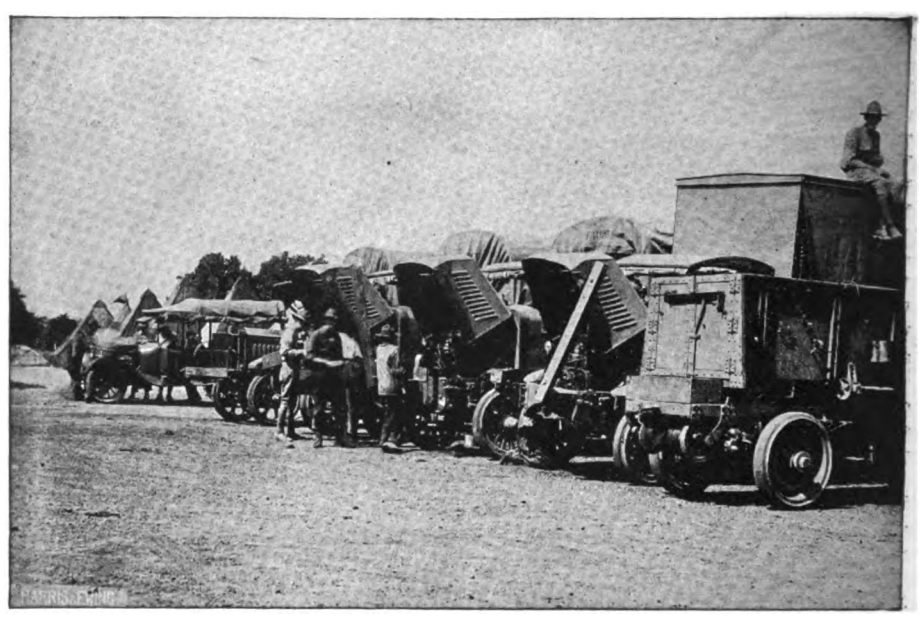
Fitting Army Train For Trip Across Continent

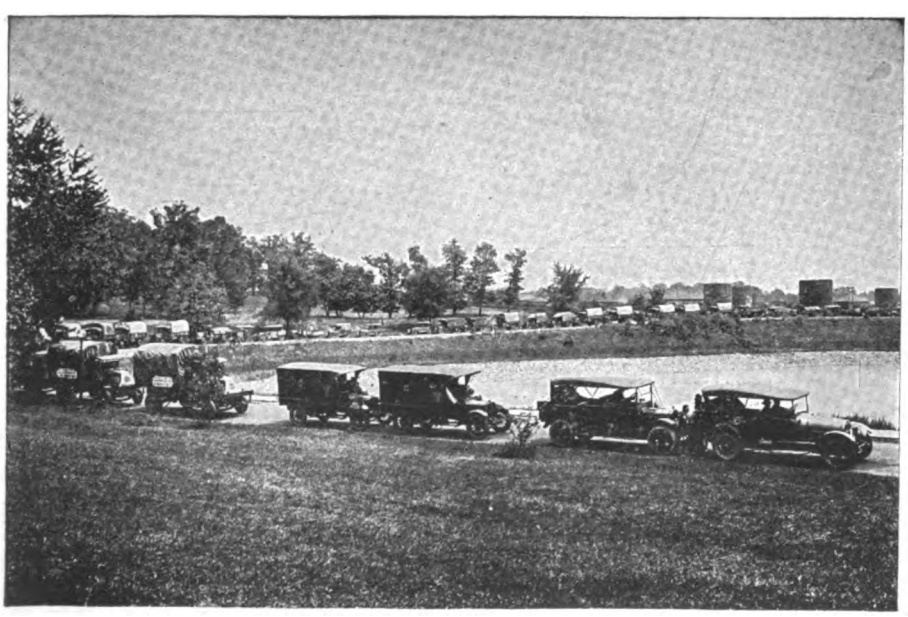
The preparations for the transcontinental march that is now being made by two companies of the Motor Transport Corps and several detachments of the United States Army, which was begun July 7 and will end about Sept. 1 at the Presidio, Cal., was an undertaking on which depended the success of the demonstration from a mechanical point of view.

No one questioned the possibility of the vehicles being driven the distance, but as the march was to be made to schedule and retardation from failure of the vehicles from any cause that could be anticipated would establish insufficient preparedness, a great deal of care was taken to be sure that all of the machines were in prime condition.

The system the vogue with the army service does not accept excuses and orders are followed literally to the letter. Every provision that could be made to insure the convoy being self-sustaining was given attention. Probably no one thing was more important than inspection and lubrication of the cars and trucks, and this was carried out systematically. Every adjustment was made to a standard and every truck and car was thoroughly oiled and greased, so there would be no possibility of lack of lubricant.

The train includes a repair shop equipped with the same machinery that was used in the field repair shops in foreign service and a sufficient stock of parts of each type and make of truck was provided so that in the event of breakage or excessive wear replacement can be made with the least practical delay. The field repair shop is equipped with several all-purpose machine tools, driven by the engine, and every hand tool that experience would dictate was necessary. The companies include a number of expert mechanics who are qualified to work on any of the trucks and cars.





The supplies carried included materials from which temporary repairs could be made, and the possibilities of uses of these in necessary work was one of the details under observation. The preparations were continued over a number of days and with military discipline were carried out in every detail. After the train was in readiness for the march the different units were finally inspected at Meigs Field and each was found to be mechanically fit.

Different lubricants were used with a view of making comparison of results obtained with each make, and the differentials and transmission gearsets of a group of the machines were filled with Dixon's greases.

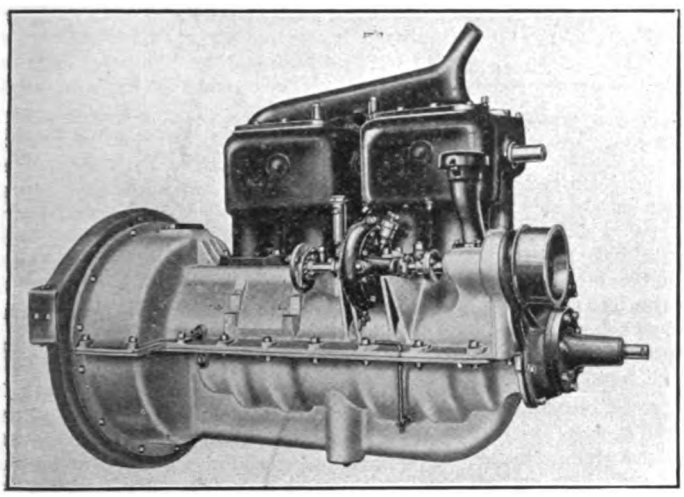
The accompanying illustrations were made by Harris & Ewing, Washington, D. C., the upper showing a field machine shop being stocked for the march, the center showing the final inspection at Meigs Field, and the lower the convoy after the start, leaving the capital for the Golden Gate.

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OVERHAULING ATTERBURY TRUCKS

Practical Suggestions That Will Apply to the Entire Series, of Work That Can Be Done with the Tools and Facilities of Ordinary Garages by Average Mechanics.

ATTERBURY trucks have been built for 15 years, for the original company was organized in 1903 and for the first few years produced electric and gasoline engined vehicles, finally concentrating on the latter class of machines. For this reason this article must necessarily be confined to the more recent productions and the range restricted to the models built within five years.



The Continental Red Seal Engine Type Used in the Five-Ton Chassis—Older Chass's Have Continental Engines, but Not So Much Improved.

Because changes have been made during the period indicated the statements made must apply generally rather than specifically. For instance, while the direction for doing a work on vehicles of a given size might apply in the main to all, the detail with reference to any two produced in different years might differ slightly.

As the space that is given to the article is necessarily limited generalities are stated as a rule. Were each size of machine specifically dealt with the subject would require many pages.

The object is to give general advice or make suggestions that will guide those who want to make systematic examination of the machines and repair or overhaul. Obviously the work that can be done will depend in large measure upon the facilities available. Inspection and adjustments and some repairing could be done in the open air, but an overhaul could only be undertaken with the shelter of a shed or garage, with a bench and boxes for keeping the parts in groups. Under some circumstances a pit is desirable if work is to be done without complete disassembly.

Given unlimited time one man could overhaul a truck with comparatively little help. As a rule, however, the time of a truck means money to the owner and the quicker the restoration is made the better from a business viewpoint. The owner can best determine the number of workers that can be employed to the best advantage.

Attention for the Cooling System.

The cooling system of Atterbury trucks consists of a vertical seamless tube radiator, with helical cooling fins of copper that is built in five sections. The upper and lower tanks and side piece are of cast aluminum, separable from cooling section, being secured by a series of cap screws. In case of accident a tube can be taken out and a new one fitted in its place. The radiators of all models of the Atterbury truck are suspended on springs. This spring suspension insures against damage from road shocks and is a substantial protection against chassis distortion and vibration.

A fan is mounted at the rear of the radiator, which draws air through the fins of the tube to facilitate cooling, a water pump driven from the timing gears keeping the water in circulation.

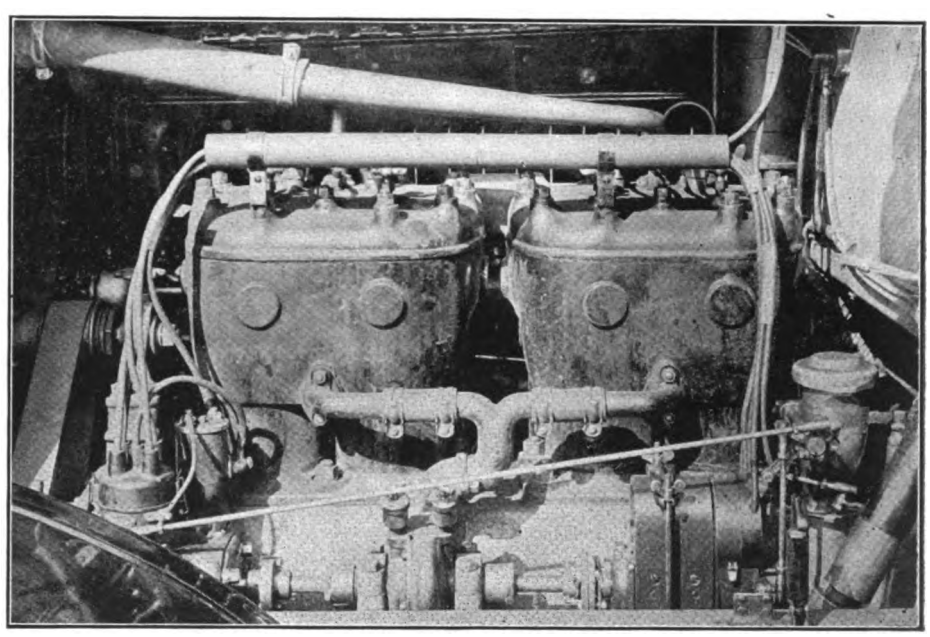
Make a solution of common washing soda and hot water, using all the soda that the water will readily dissolve, making the quantity of the solution to fill the cooling system. Draw out the water and fill the radiator and engine jacket with solution. Run the engine from 20 minutes to a half hour. Let it stand for 20 minutes, then draw off the solution and refill the system with clear water. Drain it a second time and refill. Cleaning in this manner two or three times a year will keep the cooling system practically free from sediment and rust. The soda solution will not damage the hose connections, as it is in the cooling system but a shore time.

Care of the Fan and Water Pump.

The only attention necessary to give the fan is to notice whether the bearings are worn or the balls broken. If broken they should be replaced and the bearing properly adjusted. Lubrication should be supplied by keeping the grease cup filled and turned down. If the belt is loose tighten it or fit a new belt. The belt should be just tight enough to drive the fan without any strain.

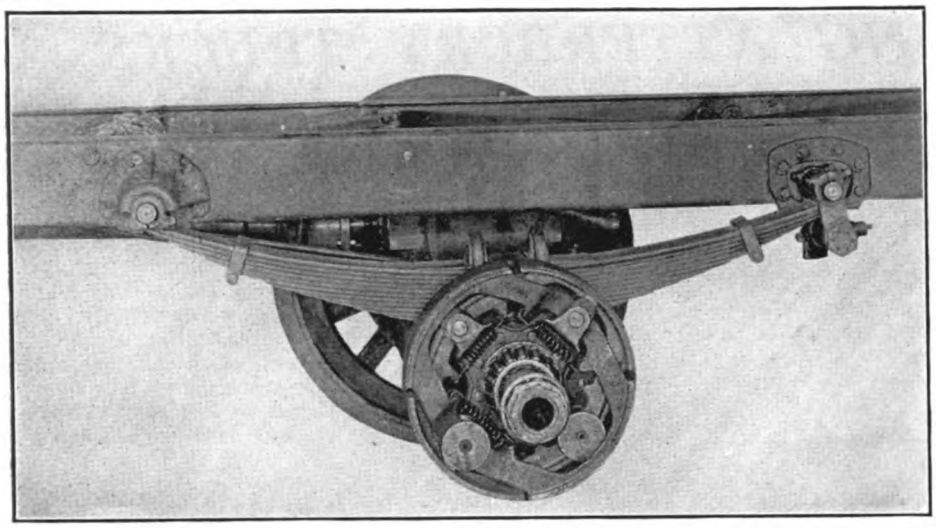
The water pump on the Atterbury truck is a centrifugal type driven from one of the gears in the timing gearset case. It consists of a cast housing divided into two parts and securely held together by short bolts. Inside of the housing is a rotor secured to the shaft by a key so that it may be removed in case it is necessary to replace the rotor.

Water is admitted at one side of the case and is forced to the water jackets of the cylinders, keeping the water in circulation while the engine is in motion. Stuffing boxes are at each side of the pump, preventing water from seeping out past the shaft. These are hexagonal nuts fitted over the shaft and filled with wicking which may be screwed together as worn to prevent leakage at the pump. Should this wicking be worn and leaks



Left Side of the Engine of the Five-Ton Atterbury Chassis, Showing the Magneto and Distributor for the Double Ignition System and the Flexible Connections of the Water Pump to the Intake Manifold.

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Wheel and Brake Drum Removed from the Rear Axle of a 3½-Ton Truck, Showing the Construction of the Duplex Internal Expanding Brake and Roller Bearings.

develop it should be renewed by backing off the nuts and inserting new wicking, well filled with graphited grease.

Examine all hose connections in the system and if any are found to be soft or leaking purchase new hose. When fitting new hose coat the ends of the pipe and the interior of the hose with shellac, as shellac will make a water tight joint that will endure.

The carburetor is the Zenith and is non-adjustable. If at any time the carburetor is not efficient in carburetion the best policy is to take the truck to an Atterbury service station and let the carburetor expert examine the carburetor and make whatever change conditions justify.

Restoring the Ignition System.

Ignition current is supplied from an Eisemann high-tension magneto for all the trucks, that is the five-ton machines being fitted with an impulse starter. The magneto on the three smaller sizes is located on the left side of the engine, standing facing the radiator. A coil is unnecessary in this installation. One set of plugs is used for the engines of the three lighter models, and these are connected to the distributor of the magnetos by high-tension cables.

One point at which trouble may develop in a high-tension magneto of the Eisemann type is at the breaker points. If they have become foul, burned or otherwise damaged they should be restored. If foul they may be cleaned with gasoline, making sure that the gasoline has evaporated before starting the engine. If the points are damaged they should be replaced. If the setting of the points is greater than five millimeters they should be adjusted by means of the screw adjustment at the side. Be sure to securely fasten this screw by means of the set nut on it, for otherwise the screw may work loose and cause the engine to run erratically. The magneto should be oiled at least every 1000 miles and only the best of light oil used.

Ignition System of the Five-Ton Chassis.

In the five-ton truck the ignition system is a different form. The high-tension magneto is fitted with an impulse starter to facilitate starting. With this is a distributor that is synchronized with the magneto draw from a storage battery. Two sets of plugs are used that fire simultaneously in the cylinders. Current from the battery is conducted to the distributor, located on the left side of the engine, that is driven by the pump shaft. The current passes through a coil that transforms it to the high tension.

This distributor will need cleaning occasionally. Gasoline and a soft piece of cloth are best for this purpose. Do not disturb the brushes or get them out of place. The switch at the dash should be examined for defects. Remember that this switch is simply used to short circuit the current and pass it to the frame of the truck to stop the engine. Loose contacts will cause failure here. Remove this switch and note whether the connections are tight.

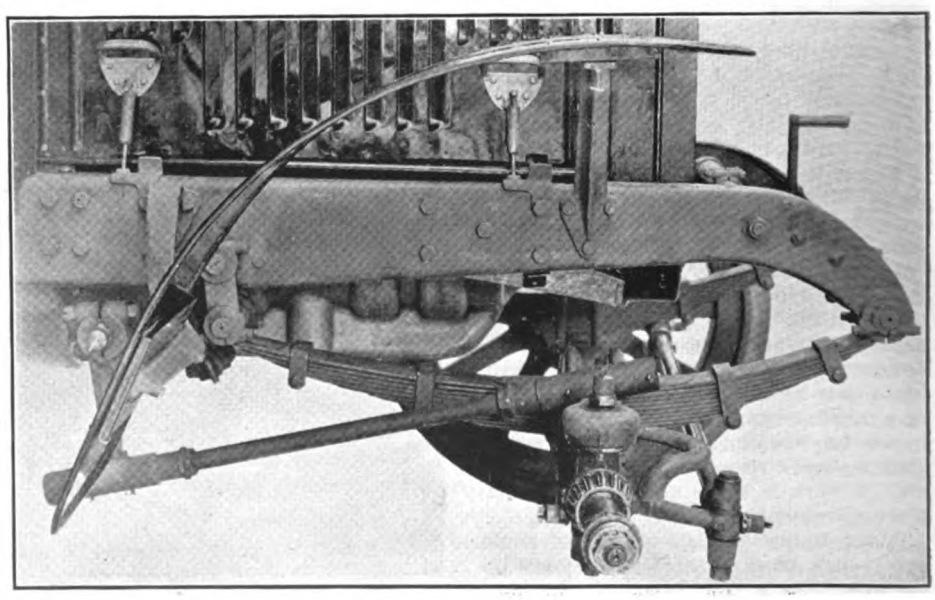
Examining the Engine.

The engines in Atterbury trucks are Continental, supported at three points, two in the rear and one in front. The rear supports are fastened rigid to the frame, while at the front the engine is mounted on a trunnion in the center of a cross member, so that in the event of chassis distortion the engine cannot be stressed. The cross member is fastened to the frame at each side and is arched to have the necessary clearance for the engine.

Every 2000 miles the valves should be ground. To grind them in the smaller models, remove the caps over the top of the valves. With a valve tool inserted in the cap openings and fitting around the stem of the valve below the spring, compress the springs, remove pins from the stems. The valves may now be removed for grinding. Use a good grinding compound (not emery) and coat the faces of the valves with the grinding compound and grind them with a rotary motion, using either a screw driver between the palm of the hands or a grinding tool made purposely for the work. After grinding a valve for a few moments remove it and wipe off the compound with a cloth. Recoat the face of the valve with fresh compound and repeat the grinding as many times as necessary until a bright ring 1/32 of an inch wide shows around the face. Repeat this process with the other valves till all are ground. Compress the valve springs and fit the pins in place.

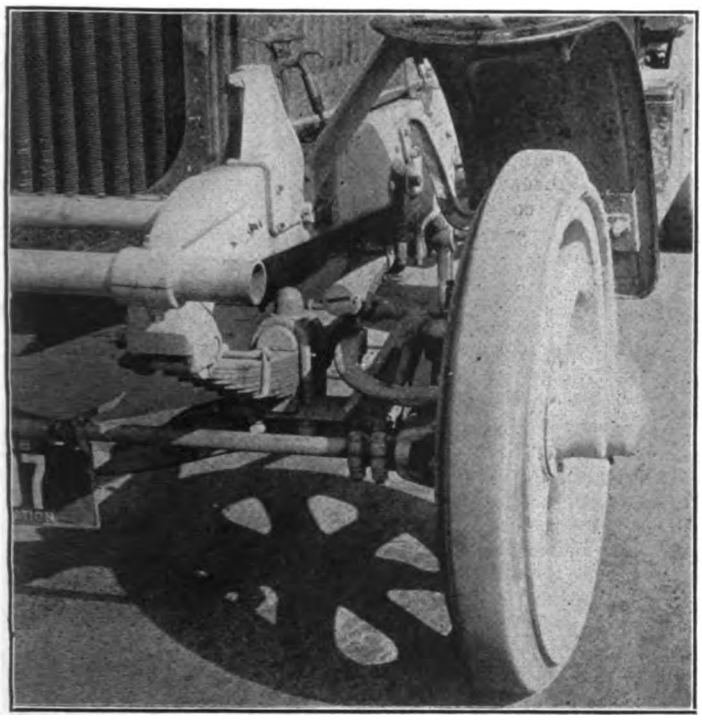
Removable Head Facilitates Work.

On the five-ton truck this work is somewhat facilitated as the head of the engine can be removed. By removing the long bolts and the gasket under the head this work can be done somewhat quicker and in the same manner as on the smaller sizes. Carbon can also be cleaned at the time that the valves are ground, as all parts where carbon will collect are easily reached when the head is off. In replacing the heads and gaskets be sure that the bolts seat firmly, and after the engine is started and the engine has become warm, tighten the bolts a second time. Otherwise a blowout may occur. In putting the gasket in place care is necessary. If these are copper asbestos coating the graphited grease will insure the gasket seating as pressure is applied to the bolts.



Front Wheel Taken from the Axle of a 3½-Ton Truck, Exposing the Steering Gear Linkage and the Spring Suspension and the Radiator Supports.

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Left Forward End of Five-Ton Atterbury Chassis to Show the Heavy Spring Horn, the Mounting of Bumper and Special Built Radiator.

In the engine of the smaller sizes the plugs should be replaced, fitting the round copper-asbestos gaskets first, and if any are damaged they should be replaced. Set the caps as far as they will go with the drift wrench supplied in the tool kit for this purpose and make absolutely sure that they are properly seated, drive them with a steel rod, square at the end, using a hammer for driving.

It is possible to overhaul Atterbury trucks without taking the engines from the frame and this is the manner in which it will be advised unless complete restoration is necessary.

Adjusting the Engine Bearings.

The bearings of the engine next receive attention. To reach them it is necessary to remove the base of the engine crankcase. This is secured by a series of bolts. This section carries the oil reservoir and the pump. Raise the front wheels from the floor several inches by suitable block, which will allow more space for the repairer to work. Remove the nuts from the stud bolts around the lower half of the base and section of the flywheel casing that projects below the base of the engine. The base can be removed and set one side with oil that it contains, or it may be drained.

Attention should first be given to the three main bearings, which are each held in place by a cap and two bolts. Loosen the nuts holding the cap on the front bearing and remove the caps. Take out one or more shims on each side and replace the cap and set the nuts securely in place until the engine can be turned with the starting crank with considerable effort. Loosen the cap of the bearing and put in additional shims of thinner stock (some repairers use paper at this point) till a slight drag is felt when the shaft is turned by the starting crank. Loosen the nuts of the cap and repeat the same operation with the second and then the third bearing.

Treat the connecting rod bearings in a like manner, leaving each bearing loose after fitting so that the tension of the individual bearing may be easily tested when turning the crankshaft of the engine with the starting crank.

After all of the bearings have been fitted, tighten the caps securely in place and wire the bolts or insert cotter pins as required. Before placing the base, give it a thorough cleaning with gasoline, freeing it from all sediment, particles of metal, etc.

The base should be fitted to the upper part and securely fastened, making sure that all of the nuts are tight. If the gasket that fits between the upper and lower sections of the base has become frayed or torn, replace it with a new gasket cut from heavy wrapping paper. This is best accomplished by holding the paper with one hand on the surface of the base that it is to fit and striking light blows with a machinist's hammer, using the peen of the hammer to cut out the bolt holes. This gasket may be shellaced to hold it to the face of the base while putting the section in place and the shellac will also make the joint oil tight.

Fill the base with fresh oil, using a larger quantity than would ordinarily be required. Usually one quart extra is sufficient, but in larger engines this may be increased. The purpose is to give the engine sufficient lubrication for the first few miles driven. The bearings will receive more oil and all danger of a bearing sticking or heating will be obviated.

Restoring the Disc Type Clutch.

The clutches on all Atterbury trucks are the same type, a multiple disc, the plates being faced with asbestos fabric, with eight driving and eight driven plates, enclosed in a housing that is dust and water tight. The clutch requires no adjustment. A heavy clutch spring automatically compensates for wear. Grease is supplied to the bearing of the clutch by a compression grease cup.

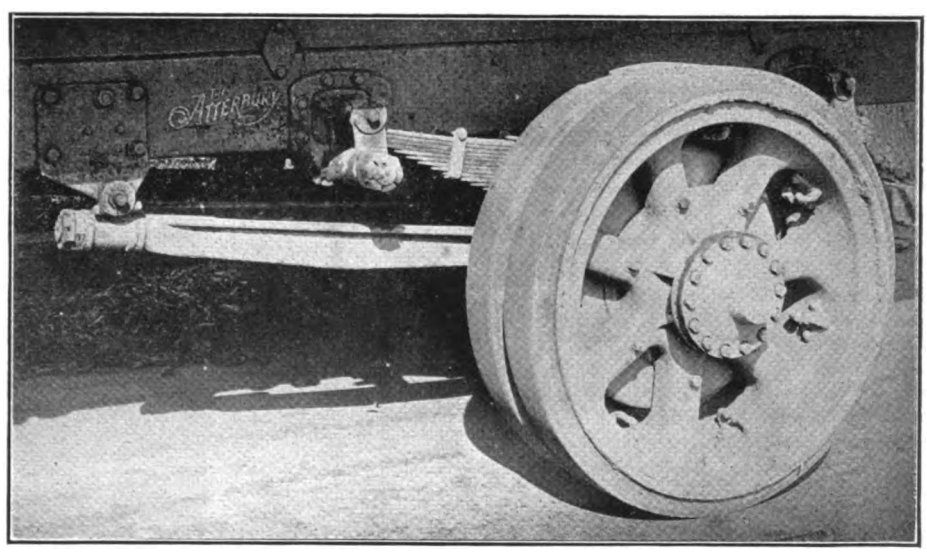
In the 1½, two and 3½ ton trucks the clutch and transmission gearset are combined with the engines in unit power plants, but in the five-ton trucks the transmission gearset is hung amidships and two universal joints are required, one at the rear of the clutch and the second in front of the transmission.

In the five-ton truck wear will possibly be found at these joints and they should be tested. This may be done by rocking the shaft by hand. If excessive wear is found the joints should be disassembled and new parts supplied. These joints are oil tight and are covered with a metal cover. Remove the cover and disassemble the joint. The male and female sections of the joint can be forced from the key seats and readily removed.

Two Types of Transmission.

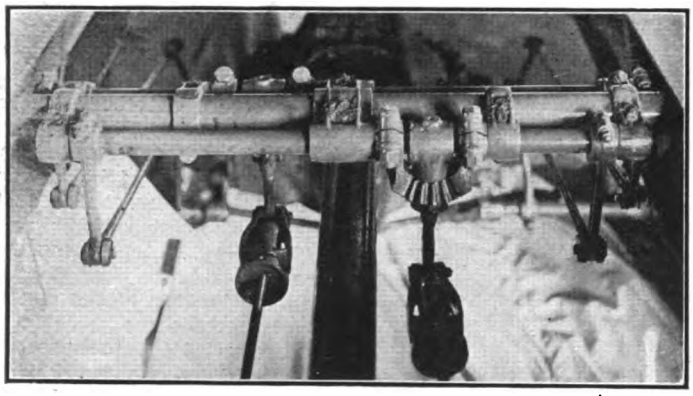
The transmission gearset in all models is the well known Brown-Lipe type and is a heavy construction throughout. These are a four speed ratio design. The shafts are large, mounted on Timken roller bearings. The gears are nickel steel, carbonized, hardened and heat treated, with 1½-inch faces.

Examine the gear teeth for damage to the edges. If they are found to be burred, remove them and grind off the burrs on a grinder or file them smooth. Adjustment of the bearings is accomplished at the ends of the main and countershaft by means of lock devices. By loosening these and turning either to the right or left will tighten or loosen the bearing as necessary. Lubrication of the transmission gearset is supplied at the top of the case through a small opening closed by a hand plate that may be



Rear Side Section of Five-Ton Atterbury Chassis—Note the Spring and Radius Rod Hangers and the Bolted Assembly of the Frame, the Webs Not Being Cut or Drilled.

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The Brake Secondary Cross Shaft, with the Bevel Gear Equalizer That Compensates the Pressure on Service Brake Shoes.

removed conveniently. Use a good grade of steam cylinder oil, as this is preferred by manufacturers to gear grease. Grease, while a good lubricant, is not preferred by many. Excellent results are obtained with steam cylinder oil that will stay on the faces of the gears and will be carried through the gears of the main shaft and the bearings.

The transmission case should be thoroughly cleaned before supplying the new oil. Drain out the old oil at the bottom of the case through the plug and wash out with kerosene or gasoline to remove the sediment and oil that sticks to the sides of the case. Replace the plug and fill the case to the normal level with fresh oil. This level may be approximated as within one inch of the main shaft.

Condition of the Universal Joints.

The drive on all models is through two oil tight universal joints and a tubular shaft to the rear axle. The joints are easily disassembled by removing the nuts of the bolts fastening the covers to the flanges at the front. Slide the covers back over the shaft and the joint can be still further disassembled. Notice the degree of wear of the joint and if found excessive when the shaft is rocked supply new parts.

Oil is supplied to the joints through holes fitted in the covers, and the lubricant should be a grease or steam cylinder oil. Put in fresh lubricant about every two weeks if the truck is in constant use and at longer periods if the truck is used intermittently. As these joints are oil and dust proof the chance for leakage of oil is very small. The main care necessary is to see that the bolts and nuts that fasten the cover are kept tight and that the joints are kept properly oiled.

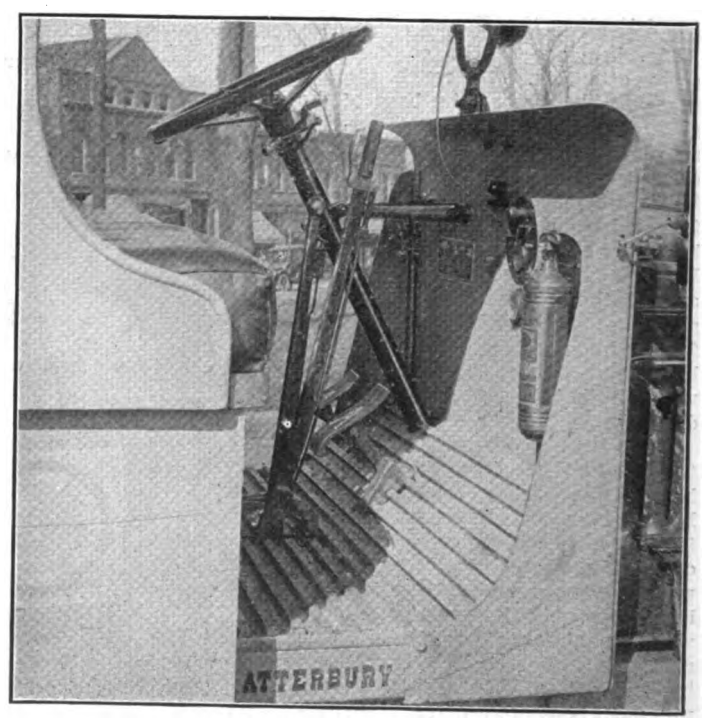
Adjustment of the Rear Axles.

The rear axles of Atterbury trucks are Timken construction and are full floating, worm driven types, fitted with Timken bearings throughout. The driving shafts may be removed through the hubs of the wheels after taking off the hub caps. After uncoupling the universal joint ahead of the worm shaft top of the central section of the housing may be removed, after removing the nuts from the studs around the circumference of the cover. The cover and the entire differential assembly can be lifted with a block and tackle from the axle housing. Adjustment of the worm shaft and differential can be made after the assembly is hoisted out. The differential adjustment is made at the bearings and by a threaded adjustment collar, securely fastened to a locking device. By loosening this lock the adjustment collar can be turned to the right or left, setting the tapered collar either tight or loose against the bearing as condition requires. Adjustment of the worm is made at the forward end of the worm by loosening the two clamp screws over the adjustment collar and turning the collar to the right to tighten and to the left to loosen the position of the worm in relation to the gear.

The housing should be drained of oil, flushed with kerosene or gasoline to remove the sediment and old oil. Removing the plug at the bottom of the gear case it may be drained. Replace the plug and fill the case with steam cylinder oil up to the filling spout. This is the proper height determined by the manufacturer to carry the oil. Replace the differential assembly and cover, making sure that all nuts fit the bolts and that the cover is fastened securely. Replace the axle shafts and bolt on the hub caps. Make sure that the wheel bearings, which are Timken, are well lubricated with a heavy oil, which can be injected with an oil gun through the plug openings in the wheel hubs. Possibly the wheel bearings may need adjustment. The condition may be tested by rocking the wheels after jacking the axle. If there is too much play adjust the bearing by turning the adjusting collar to the right till the right seating is obtained.

The brakes on all models are known as the "Duplex" and are internal expanding type, housed in the rear wheel drums. The service brake, operated by the foot pedal, has three adjustments on the pull rod, one at the cross shaft at the rear of the pedal, a second, having a spring tension, below the second cross shaft over the propeller shaft, and the third at the end of the rods at the ends of the brake arms. The emergency brake, operated by a hand lever, has three adjustments, the first located below the first cross shaft, the second having a spring tension, located below the second cross shaft and over the propeller shaft. This adjustment differs from the service brake from the fact that provision is made for equalizing the pull on the brakes, through a pinion meshing with two segments, one at each side, attached to the sleeve of the brake shaft. The third adjustment is at the levers of the axle brake shafts. Adjustment at any of these points is quickly made by removing the cotter pin that passes through the pin of the brake rod yoke, sliding out the pin and turning the yoke either to the right or left to tighten or loosen the setting of the brakes. The adjustments at the rear over the axle housing are for setting the individual brake, while the adjustments, first or second, are more for adjusting the brakes as a unit, either service or emergency.

Setting of the individual brakes is best accomplished by making use of two jacks, one under each end of the housing, and lifting both rear wheels clear of the ground. With one man on the seat, loosen the rod over the axle and turn the yoke to the right till such a point is reached as will take up the excessive clearance. Then connect the rod to the arm. Do the same with the rod of the opposite brake and have the man on the seat try the brake. If the wheels lock with the service brake, when the pedal is depressed half way, the setting is sufficient. If one wheel locks and the other does not, repeat the adjustment until both wheels lock equally. The object is to have both wheels clamped with the same pressure at the same point in the depression of the pedal. The emergency brake, because of the equalizing device, will practically care for itself, but should a condition develop where it is necessary to adjust this brake, the detail de-



The Curved Steel Dash of the Five-Ton Atterbury Truck, Strongly Braced, the Control Members and Instrument Panel, and the Heavily Cleated Footboard.

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scribed for the service brake will afford the desired results.

The Springs and Frame.

The frame is suspended on four semi-elliptic springs of unusual length and width and with the number of leaves proportioned to the capacity of the truck. Provision is made for take-up at the ends of the springs, by two bolts and a clamp. When wear takes place at the spring ends the wear may be compensated by tightening the bolts. Lubrication is provided by felt wicking placed around the bolt that holds the spring end in the shackle or hanger.

Springs may be lubricated by melting paraffin and adding graphite and applying it between the spring leaves while still hot. Lubrication of the spring shackles is by grease cups, using heavy cup grease. These should be kept filled and turned down every few days.

The frame is of heavy construction and rivets are not used in assembling, S. A. E. bolts and nuts being used throughout. Examine the nuts and bolts to see whether they show signs of becoming loose. After a truck has been in continuous service for a length of time the bolts may become loose and should be tightened. They are fastened with lock washers and cotter pins, and the constant strain to which the frame is subjected will eventually loosen them.

Adjustment of the Steering Gear.

The steering gear of Atterbury trucks is a Gemmer construction. The tie rod joining the front wheels is in front of the axle instead of at the rear, giving greater ease in steering. All slow moving parts are provided with grease cups and these should be well supplied with grease and turned down frequently. Adjustment of the worm is made at the top of the worm by a clamp and nut. Loosening the clamp and turning the nut to the right tightens the adjustment and turning to the left loosens it. Grease is supplied to the worm by a large grease cup, heavy cup grease being used. It is very essential that the steering gear should be in proper working order and for that reason should be examined frequently, and all lost motion taken up.

Alignment of the wheels may be tested by purchasing a manufactured aligner, placing it at the front of the wheels first, then placing it in the rear of the front wheels. The difference front and back will be shown by the aligner and the adjustment can be made by changing the tie rod.

MANAGER OF THE DETROIT RADIATOR CORPORATION.

Harry H. Rowe, for the past 14 years branch manager of the Burroughs Adding Machine Co., has become general manager of the Detroit Radiator Corporation, with executive offices at 485 Woodward avenue, Detroit, Mich.

Major William M. Britton, one of the designers of the standard military truck, who was recently discharged from the army, has become chief engineer for the Republic Motor Truck Co., Alma, Mich.

VOGLER IS AMERICAN TRUCK SALES MANAGER.

Harold J. Vogler has been appointed general sales manager for the American Motor Truck Co., Newark, O., builder of Ace trucks. Mr. Vogler has had wide experience in the industry and trade. He is a graduate engineer and after working in the shops of the Penn Motor Car Co. became retail salesman and wholesale manager for the concern. He went to the Locomobile Co. of America as special representative and in 1913 joined the Maxwell Motor Co. as Philadelphia district manager, and in turn became New York district manager, special executive representative and eastern supervisor. He was metropolitan wholesale manager for the Willys-Overland Co. when he entered the service of the United States army and was commissioned, serving in



Harold J. Vogler, Sales Manager, American Motor Truck Co., Newark, O.

the ordnance department, and was later in charge of Handley-Page aircraft production at Cleveland. Following the armistice he became general manager of the White service station at Philadelphia, and resigned this position to go to the American Motor Truck Co.

CUSHION SPRING DOUBLES ITS CAPACITY.

The Jackson Cushion Spring Co., Jackson, Mich., is preparing to double its plant capacity and production. Two plants of the Borden Condensed Milk Co. were recently purchased and are being converted into spring factories. Five hundred men are now at work and plans are under way to increase this force to 1000.

UNITED STATES TRACTOR IN NEW PLANT.

The United States Tractor Co., Menasha, Wis., which recently moved from Chicago, has started assembling operations in a part of its new plant, which will be completed by July 10.

FULLER & SONS MFG. CO. ESTABLISH EASTERN OFFICE.

The Fuller & Sons Manufacturing Co., Kalamazoo, Mich., has established an office at 222 American Circle building, 1834 Broadway, New York City, which has been placed in charge of F. George Walker. The rapidly growing demand in the East for clutches and transmissions for cars, trucks and tractors produced by this concern has necessitated locating a representative in the metropolis.

N. Y. CITY'S HORSES DECREASE.

According to the statistics of the sanitary bureau of the Department of Health of New York City covering from March 31, 1917, to the corresponding date this year, the number of horses owned in the city decreased from 108,036 to 75,740, a shrinkage of 32,696, and that during the same period there was a decrease of 2664 in the number of occupied stables.

TRUCKS IN NEW YORK MUST BE MIRROR-EQUIPPED.

One of the requirements of the New York state laws regulating the use of power vehicles in highways is that each truck shall be equipped with a mirror, so located that the driver can observe the traffic conditions behind him without turning in his seat, which is believed will lessen accidents and insure safer driving, especially when making turns.

OGLESBY WITH THE EISEMANN MAGNETO COMPANY.

Richard A. Oglesby has recently become identified with the sales organization of the Eisemann Magneto Co., New York City. He was chief engineer of the Quick Action Ignition Co. until he entered the government service as first lieutenant in the Ordnance Department. He was president of the National Gas Engine Association from 1914 to 1916.

HOOD IS STANDARD TRUCK SALES MANAGER.

Announcement is made by the Standard Motor Truck Co., Detroit, of the appointment of Wallace C. Hood as general sales manager. Mr. Hood is well experienced in the trade and industry. He was sales manager for the Standard Motor Truck Co. four years ago and more recently was general sales manager for the King Motor Car Co.

JACKSON AUTOMOBILE CO. TO BUILD TRUCKS.

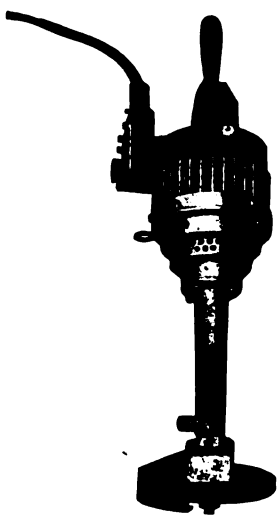
The Jackson Automobile Co. of Jackson, Mich., will start production of a 3½-ton four-wheel driven truck about Aug. 1. This company, which has been idle since the signing of the armistice, has discontinued the manufacture of passenger cars and will confine itself to the manufacture of trucks only. Material for the initial series of trucks has been obtained.

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Garage and Service Station Machinery, Tools and Equipment

VAN DORN AERIAL GRINDER.

The Van Dorn Electric Tool Co., Cleveland, O., manufactures an electric tool grinder of the aerial type that is claimed to be an economical tool, adapted for many works in a service station or repair shop. It can be operated in a very limited space and connected to any electric light socket, being constructed for use on a single phase alternating current circuit. The motor is one-third horsepower, 60 cycle. It is equipped with one six-inch wheel, a wheel guard,



10 feet of electrical conductor with attachment, plug and fuses and suspension spring.

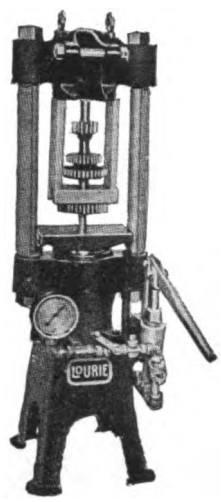
The rotor shaft is mounted on two annular ball bearings and the design insures perfect alignment. The wheel end of the extension shaft is supported by a bronze take-up bearing, which has a very simple adjustment.

This machine is adapted for all kinds of work, such as dressing gas and arc welds, grinding castings and the like, and is manufactured in various sizes and for all classes of work from the lightest to the heaviest. It may be purchased either for alternating or direct current.

LOURIE HAND HYDRAULIC ARBOR PRESS.

Lourie hand hydraulic arbor presses built by the Lourie Manufacturing Co., Springfield, Ill., are smaller capacity than the power presses built by this company and are designed for garages and repair shops for such work as forcing gears and pulleys from shafts, forcing them on shafts, broaching keyways in gears, etc. With them one can do such work quickly without battering the end of the shafts or breaking the gears. Such a press may be used for testing the strength of materials, broaching holes, pressing bushings and pins to place, removing ball races from auto and truck shafts, straightening shafts or bars and the like. In operation the motion is reversed from screw and rack machines, being up instead of down.

Each press has a base cylinder, ram pump, with valves, cross head, strain

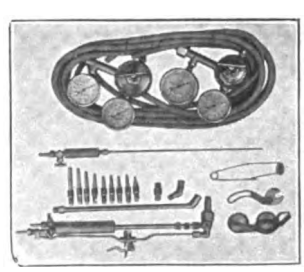


bars and springs to return the ram quickly to the cylinder. Extras include gauge V blocks for spacing, swinging arms for V blocks and additional pump. The capacities are 20, 30, 40, 50 and 60 tons. To operate the press the tank is filled with any light running oil, the valve is closed and the pumpage of oil into the cylinder raises the ram. To release the pressure the valve is opened and the springs cause the ram to return into the cylinder.

ECONOMY WELDING OUTFIT.

The Economy Welding Machine Co., Southwest Boulevard and Central Street, Kansas City, Mo., builds Economy Welding Outfits for garage and service station repair work.

The outfit includes the necessary tools, burners, connections, tips, gauges, etc.,



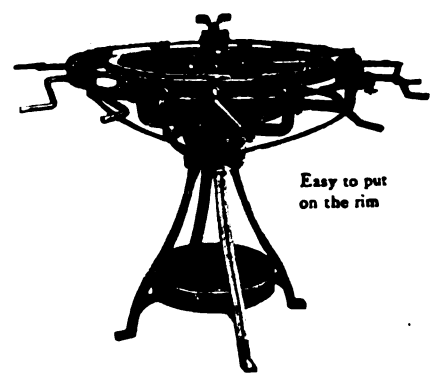
for welding practically any work that may come to the shop, everything being supplied except the oxygen tank and the gas. With this outfit a repairer can mend broken frames, cracked engine cylinders, burn out carbon and do all manner of oxy-acetylene welding.

The Economy outfit is the development of many years of successful experimenting with various types of welding apparatus and the manufacturer claims that as offered to the trade it stands in a class by itself.

UNIVERSAL WHEEL COMPRESSOR.

The Universal Wheel Compressor Co., Cedar Rapids, Ia., builds Universal Wheel Compressors, a tool for repair shop use when rebuilding and cutting down motor truck wheels for installing pneumatic cord tires. The manufacturer claims that with it wheels formerly regarded as junk may be repaired to almost original serviceability.

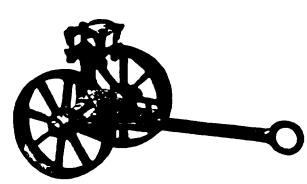
The compressor is adjustable to all types of auto and truck wheels. With it repair work may be done speedily and with ease. A wheel can be accurately set to give it a desired dish and each spoke can be pressed individually. Any



rim can be pressed on without the use of clamps. The machine is so constructed that the compressing ring may be turned like a turntable, no power being needed. Wheels of any size or weight may be worked on with it.

E. & S. TOWING TRUCKS.

A utility for truck service stations or owners in the E. & S. Towing Truck, manufactured by the Ellis-Smith Manufacturing Co., Inc., Buffalo, N. Y. It is strongly made of high grade materials and is very durable, there being no



working parts or joints to break or wear. Its simple construction makes it practically indestructible and it will serve the entire range for towing trucks large or

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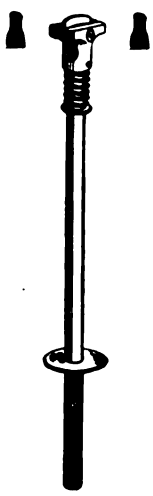
small from the front or rear.

The truck is equipped with 14-inch wheels which are large enough to ride over car tracks and other obstructions, which are equipped with four-inch tires. The tread is 18 inches and the weight is 160 pounds. The length of the towing pole is 120 inches and a large ring is welded at the end for making the hitch.

The E. & S. Towing Truck is guaranteed to give satisfaction or it may be returned to the dealer from which it was purchased.

HUDSON UNIVERSAL JOINTED VALVE GRINDER.

The Hudson Motors Specialties Co., 1932-34 Arch street, Philadelphia, Pa., manufactures the Hudson Universal Jointed Valve Grinder, which is fitted with a universal joint so that the working end has a certain degree of motion in any direction with reference to the shank. When the shank is revolved between the palms of the hands the entire valve area is ground accurately. This



tool is especially useful in grinding the valves of the fourth cylinders of Ford engines, which are difficult to reach with other grinders.

The tool is a simple, strong construction and the universal joint is formed by pinning the tool head to the shank with a pin, that is much smaller than the hole through the shank. A coiled spring between the head and the shoulder of the shank takes up all looseness and holds the head square with the shank.

H. B. PORTABLE ELECTRIC GRINDER.

The Hamilton-Beach Manufacturing Co., Inc., Racine, Wis., now build a portable electric grinder for use with a lathe for repair shop and service station work.

The work is held in the chuck of the lathe, the grinder being fastened by a short steel arm to the adjustable rest or post on the bed of the lathe. The grinder may be connected to any convenient electric light socket for current and operates a short shaft that drives an emery wheel that bears against the work. The motors are for either direct or alternating current, either 110-120 volts, 25-60 cycles. The universal joint is per-



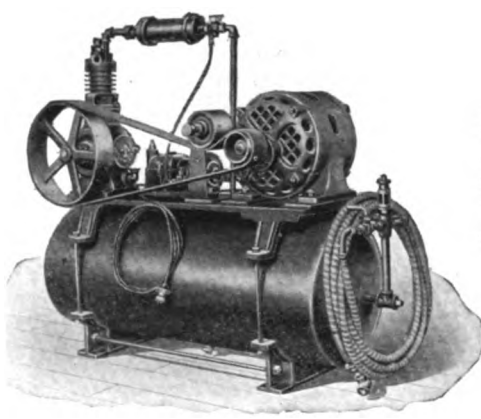
fectly fitted and is true in operation. The emery wheel furnished with every H-B grinder is tried, trued and tested at the factory. All grinders are equipped with a C. H. feed through a switch placed near the grinder so that the current may be instantly cut off without leaving the work.

A special feature of the H-B grinders is the dust proof bearing caps. No grit or dirt can come in contact with the high speed nickel babbit bearings. The manufacturer claims that this grinder is built of the best material and is guaranteed for life.

GARDNER COMPRESSOR OUTFITS.

The Gardner Governor Co., Quincy, Ill., is building a series of service station and garage air compressors which includes an outfit of the unmounted type having a tank mounted in a cast iron sub-base, suitably spaced by long bolts. The motor and compressor are placed on a metal or wooden base on the top of the tank and securely fastened to the tank sub-base by long bolts.

The tank is equipped with a suitable length of hose, shut off valve, safety



valve and valve for connecting with the valve in the tire for inflating. The motor and compressor have the necessary wire connections for current, with automatic cut-out for stopping the motor when the tank has been filled to capacity. The motor is built for the regular alternating or direct current using either 110 or 220 volts, 25 to 60 cycles.

The air compressor is of the single cylinder vertical type and is placed at the opposite end of the motor base and connected to it by a belt. An idler is installed on the motor case, bearing on the belt to keep it under tension. Other compressors manufactured by this concern are mounted and unmounted types that are to be connected to piping systems of the buildings in which they are used.

REE'S DOUBLE WORM JACKS.

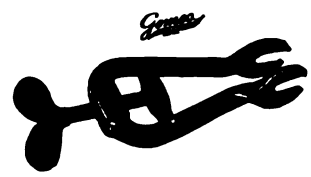
The Iron City Products Co., 7501 Thomas Boulevard, Pittsburgh, Pa., builds a series of jacks known as the Ree's Double Worm Gear Drive. Worm gearing is included in the construction of these jacks, which are claimed to be very powerful. These jacks should be useful in garages and service stations and for truck owners generally because of their lifting power, the ease of placing them beneath the axles and the fact that they may be operated from a standing position. They are manufactured in



a variety of sizes and weights and for all classes of work. The manufacturer claims that a child can lift a two-ton load with ease with one of these jacks and that the jack cannot drop while under load.

GEMCO VALVE TOOL.

Garage, service station and truck repairers will find the Gemco Universal Valve Spring Release, manufactured by the Gemco Manufacturing Co., Milwaukee, Wis., a very useful tool. It is a valve lifting and spring release tool combined that not only lifts the spring, so



the pin may be released, but also holds the spring while the valve grinding operation is taking place.

It consists of two arms, forked at one end and hinged to a cross member at the other. A bolt carrying a winged nut at one end passes through the center of the cross member and fits against a block slidable between the two hinged arms. When operating the forks are placed one under the valve spring and the other over the push rod, and they are forced apart by the bolt and block, the block bearing against the sides of the arms. By turning the bolt in the opposite direction the tool may be released for use on the next valve.

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New Motor Truck Accessories and Supplies

DIXIE AUXILIARY VIBRATING SYSTEM.

The Splitdorf Electric Co., 98 Warren Street, Newark, N. J., is manufacturing the Dixie Auxiliary Vibrating System, an outfit designed to use a battery in connection with the Dixie magneto, to facilitate starting gasoline engines in cold weather or when cranked by hand, which is necessarily at slow speed. The outfit consists of a vibrator, two small windings and a condenser, all housed within the switching device, which makes a compact unit. The battery current is carried through the vibrator to the circuit breaker of the magneto, the high-tension current being distributed to the spark plugs through the distributor on the magneto. The switch has three letters, B, O and M, referring to Battery, Off and Magneto.

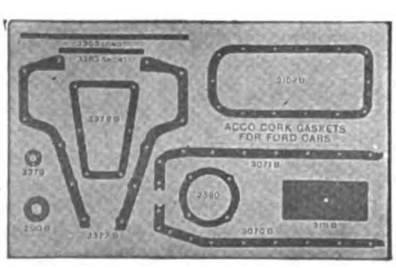


The battery side is used in starting the engine and after the engine is running the switch is thrown over to the magneto side, the engine operating on this point till such a time as the driver wishes to stop, when the switch is moved to the position marked O, the magneto being short circuited in the usual manner and the engine stopped.

This system is made to operate on a six-volt circuit, using either dry cells or a storage battery, and is very compact and neat in design. It is claimed that the vibrator windings are mechanically assembled and cannot be affected by heat, as no wax or insulating material is used to hold the windings in place.

ACCO CORK COMPOSITION GASKETS.

The Armstrong Cork Co., Pittsburgh, Pa., manufactures cork composition gaskets of all shapes and sizes for engine repair and inserts for brake and transmission bands, washers, etc. The base of this composition is ground cork, and it has proved to be extremely satisfactory where heat or oil are the determining elements and the temperature does not exceed 212 degrees Fahrenheit. It is made of selected, clean, ground cork and a special non-hardening binder. This binder not only holds the cork together, but preserves its natural elasticity and prevents shrinkage.



Acco Cork Composition Gaskets are not effected by oil, gasoline, grease or water, and may be kept in contact with any of these without disintegration. The elasticity of the cork is not only retained, but the process of manufacture tends to increase it. This is especially desirable where a surface is uneven and a gasket is to be used. In applying these gaskets it has been found by repairers that the best practise is to coat one side with shellac and the other with graphite. By this method the gasket may be removed as often as necessary without damage. Acco Composition may be purchased in sheet form so a repairer may cut gaskets to any shape.

BADGER TRUCK JACKS.

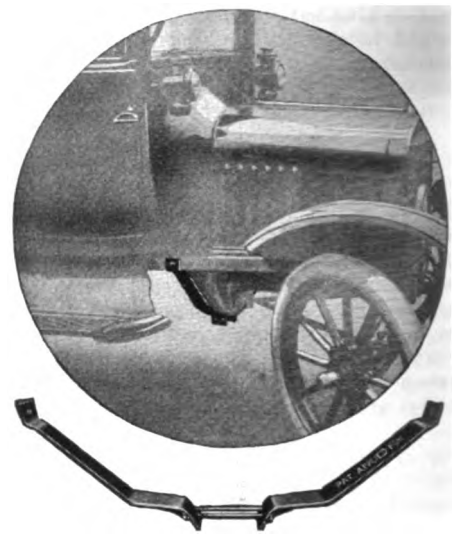
The Walker Manufacturing Co., Racine, Wis., is producing Walker screw jacks, which have lifting capacity from three-quarters ton to six tons. The jacks are made of the best of materials, are built for heavy work and are guaranteed not to slip or drop the load when in use.



The bases of these jacks are large, are standard ribbed and the steel working parts are designed to withstand the heaviest work. The lift is exceptionally easy, a short stroke of the handle giving a rapid rise and the reverse is positive in action. The Walker screw jacks are operated by a screw instead of a rack and pawl.

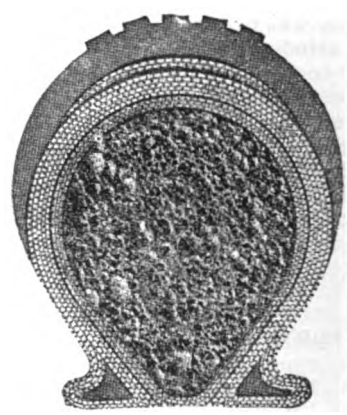
SIMPSON CRANKCASE SUPPORT.

Simpson Garage and Machine Co., Newark, O., is making the Simpson Crankcase Support for Ford engines, which has many novel features. The support consists of two short strips of steel, shaped to fit around the base of the flywheel of the Ford engine. These strips are adjustable by two long bolts at their centers. The end of the strips are bolted to the frame of the car and are then drawn tight by the two center bolts. This device is particularly valuable in case one of the engine supports break while on the road. By applying this device to the engine of a Ford car the possibility of a broken support arm is in a sense eliminated.



PARCO INNER TIRES.

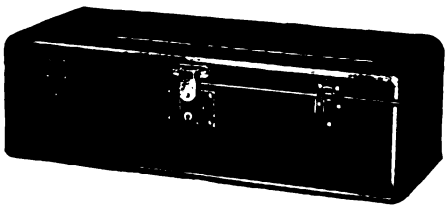
The Pan-American Rubber Co., Milwaukee, Wis., are manufacturing a superior article in a tube filler known as Parco Inner Tires. The tube is sold to the trade ready filled and all that is necessary is to place the tube in the casing and it is ready for the road. No inflation is necessary and it is claimed that equal resiliency is obtained as with inflated casings and that they have the added advantage of being puncture proof. A set of casings and Parco Inner Tires under ordinary service on light trucks, it is claimed, will give many thousands of miles of service and the casings may be worn down to the fabric before they are no longer serviceable. The inner tires may then be inserted in new casings and still further use obtained from them.



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NEW TOOL BOX FOR TRUCKS.

The Globe Machine and Stamping Co., 1200-50 West 76th Street, Cleveland, O., is manufacturing a tool box suitable for truck equipment that is very strongly built and incorporates several novel features. It is known by the stock number B-2296-SCI.

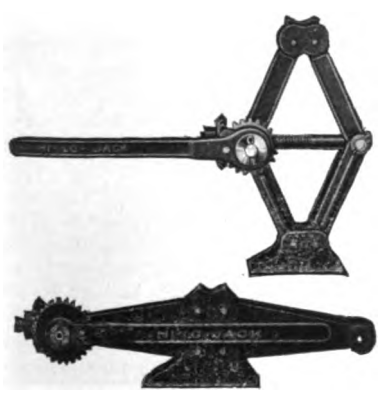


The box is equipped with suit case lock and two catches. The bottom is electrically welded to the body, making it as strong as though formed from one piece of sheet steel, and the cover corners are annealed.

This box was designed to meet the demand for a box that combines strength of body with permanence of finish, and at the same time can be sold at a price that is attractive to truck owners. The box measures 22 inches length, nine inches width and 6⅞ inches height.

"HY-LO" TRUCK JACKS.

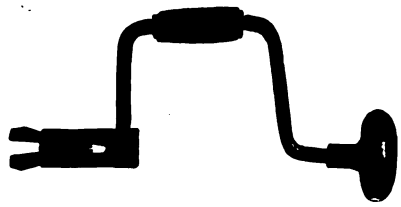
The Rowe Calk and Chain Co., Plantsville, Conn., manufactures a series of jacks designed for truck use in which a new principle of jack construction has been adopted. The jacks consist essentially of two toggled side members, between the centers of which is a worm shaft. One end of this shaft is anchored at a toggle center, and on the other end which extends beyond the side member, is a bevel gear. The shaft is cut as a worm for a part of its length and this worm engages with a block. On the joint of the side members that carry the worm block is a short shaft, on which is mounted a second bevel gear that engages with the gear of the worm shaft and the end of the lifting handle. The handle has a pawl near the shaft that engages with and actuates the gears and the worm shaft.



The jacks can be collapsed to have five inches height and lifting can be begun at a height of six inches. The lifting range is to 17 inches, which is considerably greater than jacks of other types. The higher the lift the more the power is compounded. The jacks are built of drop forgings, malleable castings and cold rolled steel and are claimed to have large margins of safety.

UTILITY WRENCH.

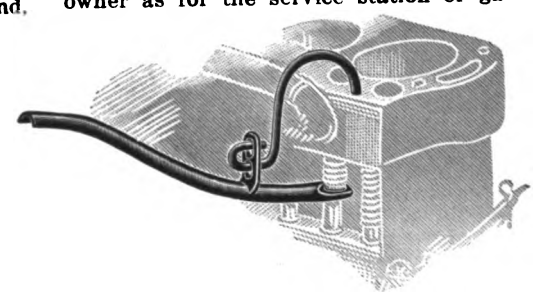
The Hill Pump Valve Co., Chicago, Ill., manufactures the Utility universal wrench, which is a single tool that will fit all demountable rims, incuding those of large size cord truck tires. It is built in one size only and is made such a length that it may be carried in the tool box.



The new Utility Wrench is finished in nickel and black enamel, and the jaws are practically unbreakable. For slight additional cost a Universal Utility Wrench set may be obtained and this set of sockets and the wrench make a very complete socket wrench outfit.

LIBERTY VALVE SPRING LIFTER.

The Madison Tool and Stamping Works, Madison, Wis., is producing a new valve tool known by the trade name of the Liberty Valve Spring Lifter. The Liberty Valve Spring Lifters are so designed that two valves may be removed at one placing of the tool without removing the manifold on the side of the engine. This tool is equally as useful for the home repairer or Ford vehicle owner as for the service station or garage. It is made of cold rolled steel and is indestructible. It is simple and easy to operate, requiring only one hand to manipulate it, and stays in place without locking or holding.

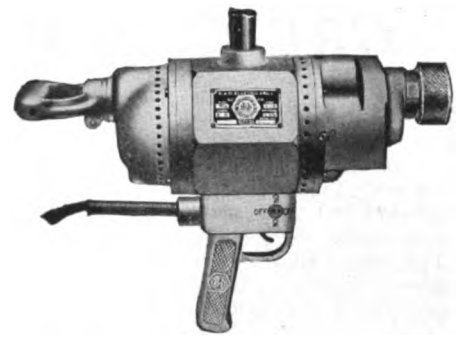


The manufacturer claims that with this tool the most stubborn valve may be removed with ease and the necessity of resetting the pin each time is eliminated.

B. & D. PORTABLE ELECTRIC DRILL.

The Black & Decker Manufacturing Co., Baltimore, Md., is building a new portable electric drill, having a capacity up to 9/16 inch that will drill a 9/16 inch hole through machine steel at a rate of 1½ inches per minute without overloading the motor. The manufacturer claims that the drill has been tested with pressures up to 500 pounds without stalling the drill. This drill is similar in construction to other sizes manufactured.

The housing is of magnalite, an aluminum alloy of great tensile strength. The gears are packed in grease in a separate grease tight compartment similar to an automobile transmission gearset, the drill spindle running in a long bronze bushing and against a ball thrust bearing. The motor is air cooled and in testing these drills have been run continuously for 14 weeks, day and night, including Sundays and holidays, stopping only to renew the brushes. The weight of the drill complete is 21 pounds and the load speed 600 revolutions per minute.

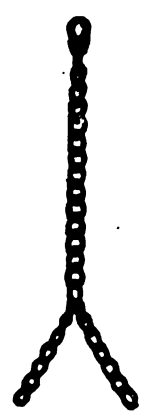


An interesting feature of this tool is the attachment for the Morse taper socket. This is a separate sleeve secured in the drill by a large knurled nut. By unscrewing this nut the entire taper socket may be removed from the spindle. This drill has the patented pistol grip and trigger switch which characterizes all Black & Decker drills.

FLASHON PATENTED INTERLOCKING LINK.

Manufactured by the National Chain Co., 30 East 42nd street, New York City. This device is claimed by the manufacturer to be the easiest non-skid chain to apply to trucks using solid tires, either single or dual, that can be obtained; that it can be attached in the quickest time and when once in place it will not work loose.

The device consists of a chain with two short lengths at one end in the form of a Y, having a patented interlocking hook attached at the other end. To place it on the tire for use the chain is passed over the top of the tire with the hook nearest the operator. The two short lengths are passed around a spoke of the wheel and the patented hook snapped into the links of the two short lengths of chain, securely fastening the chain to the wheel and spoke.



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GREAT DEMAND FOR ROAD ENGINEERS

THOUSANDS of road builders are needed to do the work that has already been projected by the nations and the states. By this is meant engineers and their assistants, who plan and supervise the work.

The supposition may be that any civil engineer is qualified to construct highways, but as a matter of fact experience in road construction and maintenance is just as necessary as in any other work. And the main object is to find men who are sufficiently experienced to build the roads so they will endure.

There may be general belief that a standard specification can be adopted and roads built to this that ought to be uniform, but no such specification exists. The custom has been for engineers to determine a specification for individual work and each contract may differ.

The roads of France are built to a standard specification for each of the three classifications of roads. This means uniformity of construction throughout the nation. The highway engineers are all graduated from the same college and the practise is the result of more than 150 years' experience.

In this country many colleges have civil engineering courses, but there is no standard practise of road building. Each municipality and each state has its own engineering department, which is directed by a chief engineer, and in many instances the character of the work is dependent largely upon the appropriation available and not the traffic that the road must endure.

But without regard to engineering standards there is a shortage of men who are qualified to build roads. The need for engineers has been realized since the states have projected road building under the terms of the Federal aid act, which has made practical this year, for instance, what would not be undertaken in a term of years without governmental cooperation.

With the realization that a very large number of engineers would be required the Educational Extension Bureau of the Department of the Interior and the Office of Public Roads of the Department of Agriculture have made a survey, communicating with colleges teaching civil engineering and with different organizations of civil engineers to determine the number of men available.

Thomas H. MacDonald, engineer in charge of the Office of Public Roads, has made an estimate of the number of men who can be utilized in road building now in progress or projected. According to his determination the total number required will run into thousands, and the following tabulation specifies the classifications that are needed, and there is reason to believe that next year, and for a number of years in fact, there will be increased demand for men of these classes:

Chief executive and administrators	122
Division engineers, division chiefs and district engineers	360
Supervising engineers, party chiefs, etc.	3,685
Rodmen, chainmen, draftsmen, etc.	6,350
Total	10,517

The figures apply only to state and Federal aid work, but include the desired organization of the Office of Public Roads such as division chiefs of the bureau, division chiefs and district engineers for highway departments, and those required for field and office work. The requirements of the cities and towns and the 3000 or more counties in the United States are not considered. The engineering staffs of the departments of some of the municipalities are very large and in other instances one or two men might be sufficient to handle both the office and field work.

Road enginering has not been regarded as a distinct profession until now, but there is every reason to believe that this will be specialized. Some colleges have courses of work that specially train men for highway building, but no considerable number of graduates are available.

The future, while important, is not regarded as is the immediate need, and until this can be met there will be uncertainty as to the character of roads that shall be built.

GOODYEAR TRUCK WITH ARMY CONVOY CROSSING CONTINENT.

One of the trucks ordinarily operated by the Goodyear Tire and Rubber Co. in its Akron-Boston overland express service was assigned to accompany the convoy of the Motor Transport Corps now marching from Washington to San Francisco. The truck is driven by the same drivers who last autumn drove it from Boston to San Francisco by the same route planned for the army convoy, and their experience in driving through the mountains and deserts will be available should it be needed.

GRAHAM ON HIGHWAYS COMMITTEE OF N. A. C. C.

George M. Graham, sales manager of the Pierce-Arrow Motor Car Co. of Buffalo, N. Y., has been appointed a member of the highway committee of the N. A. C. C., of which Roy D. Chapin of the Hudson Motor Car Co. is chairman.

SAGINAW PRODUCTS CO. IS NEW FIRM NAME.

The Saginaw Products Co., Jackson, Mich., is the new name of the company formerly the Jackson-Church-Wilcox Co., that was recently purchased by the General Motors Corporation. In this combination is included the Jacox steering gear plant, the engine plant and the central foundry.

Goodyear Guarantee Service Life of Truck Tires

Akron, O., July 15.—The Goodyear Tire and Rubber Co. has announced that the guarantee that has been applied to the passenger car tires—practically unlimited as to mileage—will be applied to all types of solid and cushion tires produced by it. This in effect is that no matter how far a Goodyear tire has been driven, if it should prove defective in material or workmanship, a fair and equitable adjustment is made with the owner.

This is a radical change from the policy obtaining with the use of truck tires, which are subjected to hard use from overloading and fast driving, and the mileage guaranteed to users ranged from 5000 to 7000 miles for tires for gasoline trucks and from 8000 to 10,000 miles for electric trucks.

The claim is made by the company that its experience with passenger car tires has justified the extension of the policy to include all types of truck tires; that it is fair in that it gives to careful and careless drivers their just due; that it recognizes the justice of different basis for service adjustment, and that the unlimited guarantee has many advantages over a guarantee for a certain number of miles. Claim is also made that the policy influences the tire user to exercise better care, since upon the average mileage depends in part the basis upon which he can hope to secure adjustment if a tire should develop a defect.

NEW GOODRICH BUILDING THE LARGEST.

The B. F. Goodrich Co., Akron, O., is constructing a new factory building that will be the largest of the 84 now in use by the company. It will be 170 by 300 feet, eight stories high. The warehouse will be built next to a railroad siding and will have an unloading platform and seven special elevators.

MICHIGAN STATE AUTOMOBILE SHOW.

The Michigan State Fair is planning to hold a motor show in connection with the annual agricultural exposition Aug. 19 to Sept. 2. The show will include trucks and accessories in addition to pleasure cars.

CASE PURCHASES PROPERTY AT RACINE.

The J. I. Case Threshing Machine Co., Racine, Wis., has purchased the property of the defunct Mutual Brewery Co., at the southeast corner of Forest Park Boulevard and Boyle avenue, 192.8 by 400 feet.

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Pneumatics for the long quick haul---

Solids for the extra heavy work.

Resilient--- easy on the car---easy on the driver. Fisk quality through and through and that means nothing better on the market.

Next Time—BUY FISK

FISK TRUCK TIRES

(When Writing to Advertisers, Please Mention MOTOR TRUCK.)

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BAILEY TO BE HINKLEY DIRECTOR OF SALES.

George G. Bailey, for several years sales manager for the Brown-Lipe Co., Syracuse, N. Y., manufacturer of power



George G. Bailey, Sales Manager, Hinkley Motors Corp., Detroit, Mich.

transmission clutches and gearsets for automobile vehicles, has resigned that position to take effect Aug. 1, and will become associated with the Hinkley Motors Corporation, Detroit, manufacturer of gasoline engines.

Mr. Bailey has been for several years very active in the automotive industry and has extensive selling experience. He is widely known. With the Hinkley corporation he will be director of sales and proposes to develop a highly efficient sales organization.

A. E. Aurand, formerly designing engineer for the Zenith Carburetor Corporation, has been appointed chief engineer of the Claudel Carburetor Co.

TRUCK SERVICE EXCHANGE PLAN OPERATING IN SEVERAL CITIES.

In several of the larger cities organizations have been formed by truck transportation, cartage and storage concerns that utilize motor trucks to afford regular service for business men. The object of these associations is to promote and further in an organized, systematic way, transportation by truck. Their initial and chief object is the establishment of inter-city truck systems and rural express lines.

The associations have centrally located offices in prominent locations to serve as the centers for local truck activities, and will assist the members in eliminating the possibilities of idle trucks, undercapacity loads and light return loads. Records, operated on the registry book system and containing all data on trucks available each day, are kept on blackboards in the offices for use of the members. Through this plan the business public can get immediate trucking service by a single call instead of applying to several concerns. This plan works to the mutual advantage of both the members and the public.

NEW BROACHING MACHINE COMPANY.

The United Broach and Machine Co., Detroit, Mich., successor to the Crystal Alloy Corporation, has recently been formed for the manufacture of alloy broaches and the production of broaching appliances, tools, fixtures and special machinery in general.

NEW STOCK WAREHOUSE FOR GOODRICH CO.

The B. F. Goodrich Rubber Co., New York City, has leased a six-story concrete and steel building built for the army at Hoboken, and will utilize it as an export and Atlantic seaboard distributing station.

SCHNEIDER JOINS GRANT SALES STAFF.

The appointment of Homer L. Schneider to be a member of the truck sales department of the Grant Motor Car Cor-



Homer L. Schneider, Western Salesman, Grant Motor Car Corp., Cleveland, O.

poration, is announced by Birkett L. Williams, the sales manager for the concern. Mr. Schneider will cover western territory.

Mr. Schneider is one of the best known truck distributors in northern Ohio, being for four years manager of the Republic Motor Sales Co., Cleveland, and prior to that was for several years associated with the Van Dorn Electric Co., introducing to the trade an electric drill that was a new type of tool. His association with the Grant company indicates the steady growth of the truck division.

The Van Auken Machine Co., Pontiac, Mich., is erecting a new building 60 by 200 feet, to be completed in 30 days.



C. E. Albright, Western Sales Manager, Acason Motor Truck Co., Detroit, Mich.



Lon R. Smith, General Sales and Advertising Manager, Midwest Engine Co., Indianapolis, Ind.



Harris N. Pickett, Advertising Manager, Ohio Trailer Co., Cleveland, O.

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The Hands and the Arms of the Driver

ROSS GEARS

The Steering Gears *that* Predominate *on* Motor Trucks

SINCE the steering gear is the only part of a motor truck in which *human strength* is concerned, which is constantly in use while the truck is in operation, it must follow that the *efficiency* of the truck depends very largely upon the *hands* and the *arms* of the driver.

However perfect the truck may be mechanically in other respects, if the steering gear is so hard to operate as to cause an excessive strain on the hands and arms that turn the steering wheel, it is impossible to secure real efficiency from either the man or the truck that he drives.

On the other hand, if the steering gear is *easy to operate* it *conserves the strength* of the driver and *increases his efficiency*. Easy steering means a bigger day's work more easily done, and driver and employer are both better satisfied.

The *bearing surfaces* in the screw and nut mechanism of Ross Steering Gears are *so enormous* that it is *easy to steer* the truck under all conditions. These bearing surfaces, together with the general design of the gear and Ross *quality in materials* and *workmanship*, guarantee also an unusual degree of *safety* and *reliability*.

Over 115 manufacturers, representing considerably more than half the entire motor truck industry, have recognized the superiority of Ross Gears by using them as standard equipment on their trucks. Their choice of Ross Gears is to a certain degree a guarantee of their complete product, as it is reasonable to suppose that each one has given the same careful attention to every detail in the construction of his truck.

Write for catalog and any special information desired.



ROSS GEAR & TOOL COMPANY, 790 Heath St., Lafayette, Ind.

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NO exclusive truck company, that we know of, started its business life under such favorable auspices as ours.

A wealthy, but conservative, community was won over to the big idea of backing this new industry, not by any dazzling promotion methods, but by the quiet earnestness of a fellow-citizen who knew he was right, and who kept patiently telling his story for more than two years.

Bankers, farmers, stockraisers, merchants, lawyers, local coal mine and oil well owners—solid citizens of the county, finally became convinced that the way to make their community an industrial center was to build something better than it had ever built before; and to offer it at a price that would give the buyer more for his money than he could get anywhere else.

The idea of building "America's Greatest Truck" appealed to them as the surest way of making Sullivan the home of America's greatest truck *Company*—and with that enterprise other industries, in the same or other fields.

So, the Mutual Truck Company starts into business with ample working capital; with a new plant fully paid for; with a motor truck which IS "America's Greatest Truck" and with as many millions of local capital back of it as are necessary to build any number of Mutual Trucks and to carry out national, vocational and local advertising campaigns, which will so win and hold the attention of prospective truck buyers, that "Mutual" dealers will soon be in command of the high-class heavy-tonnage truck business of their localities.



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A Whole Rich County *its Only Industry:*

TUAL

"AMERICA'S GREATEST TRUCK"

Built wholly from units and parts that have proved themselves to be *the Masterpieces* of the truck industry.

TERRITORY
now being assigned

We shall be as critical in selecting our district and local sales representatives as we were in choosing the parts that make the Mutual *"America's Greatest Truck"*.

But when we do make a man our agent, we back him to the limit with both local and national advertising.

In applying for territory, give bank references, population of territory asked for, and estimate of the number of high class 2-ton, 3½-ton and 5-ton trucks you expect to sell in a year.

MUTUAL TRUCK COMPANY

Specifications 2-Ton Mutual
Price — Chassis — $3,375.00

Engine—Wisconsin UAU four-cylinder 4¼ x6, SAE Rating, on bore only, 29 h. p. Actual power, calculating both bore and stroke, 39 h. p. at 1000 rpm. Most other high priced 2-ton trucks use 4 x 5½ motors rated at 25.6 h. p. Wisconsin was selected, because an exhaustive study of all makes convinced us that it was "America's Greatest Truck Motor".

Clutch—Hele-Shaw—Universal No. 5 with Multiple grooved plates running in oil. Remarkable for its smooth, regular pick-up and firm final grip; its ease of operation and wear-defying long life Costs us two to three times as much as clutches used on most other high priced 2-ton trucks.

Universal—Spicer—Highest priced and universally acknowledged to be the best. Three joints in the shaft and one in the Universal clutch.

Transmission—Fuller, Model G-5, mounted amidships; 4 speed forward and reverse. How many other trucks offer *four* speeds?

Frame—Parish & Bingham Pressed Steel—6 1/16 in. channel, with 3 in. flange, pressed from ¼ in. alloy steel. We could build our own from structural steel at half the cost.

Springs—Mather Chrome Vanadium Steel. Best and cost most.

Radiator—Perfex—Cast type, three-point suspension, of our design.

Steering Gear—Ross—with 20 in. wheel. The costliest and most highly perfected type of the most famous maker.

Magneto—Bosch, ZR4, waterproof, and dustproof; with impulse starter.

Carburetor—Stromberg "M"—Latest type.

Cab—Weather-tite, whose equal no other truck maker will furnish for less than $175 extra—is a part of our regular equipment.

Castings—Electric steel at vital points where others use malleables.

Governor—Duplex (not Simplex) type, controlling both engine speed and road speed independently from each other.

Rear Axle—Worm drive 2½ ton size, ball bearing. Highest priced axle put on a 2-ton truck.

Front Axle—Sheldon, ball bearing steering knuckle type.

Wheels—Smith Metal Wheels, for solid tires and Dayton Steel Wheels for pneumatic tires; furnished as regular equipment, tho they cost us 55% more than the best wood wheels.

Tires—Firestone or Goodyear. 36 x 4 front and 36 x 8 rear, solid tires. Pneumatic tires are furnished at a reasonable extra charge.

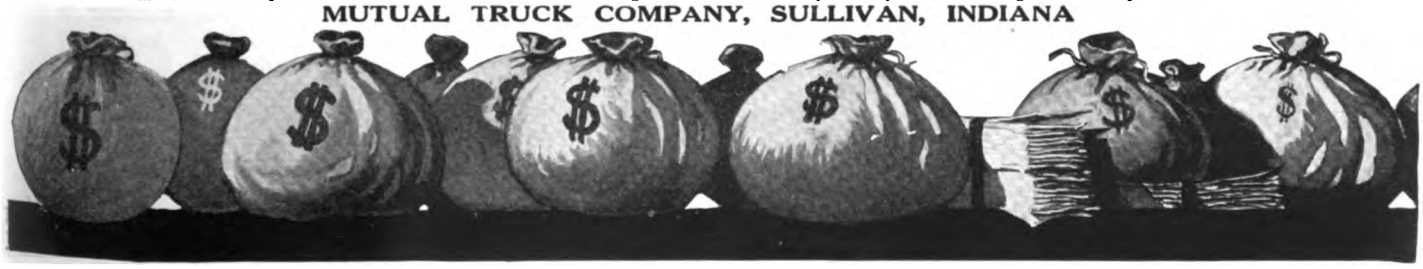
Bushings—Bound Brook Oilless, thruout. Eliminating oil and grease cups, and insuring constant lubrication.

Gas Tank—25-gallon capacity.

Reserve Lubricating Oil Tank—2½-gallon with indicator and feed valve on dash. No other truck has this important feature.

Some high class trucks have SOME of the above super-specifications; but no other truck in America offers all of them, or corresponding parts of equal merit or equal cost at ANY price. The cab, electric lights, steel wheels, lubricating oil tank, Bound Brook bushings, electric steel castings and other features of our regular equipment, if added to the "cheapest" truck would raise its price far above that of the Mutual. The Mutual gives more for the money than any other truck. Figure it out for yourself.

MUTUAL TRUCK COMPANY, SULLIVAN, INDIANA



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STANDARDIZED STANDARD TRUCKS

STATEMENT is made that Standard trucks, built by the Standard Motor Truck Co., Detroit, Mich., are identically the same construction as those built during the war for the United States government. Being constructed of standard units the trucks met government specifications with slight modifications. They were used in practically every camp of the aviation section, the signal corps, as well as in the spruce forests of the Northwest, where they were used for hauling logs, machinery and other equipment.

The series of standard trucks are worm driven and have ratings of two, 3½ and five tons. The company is about to build a one-ton size that will be in production about Aug. 1.

The Standard trucks are built practically to a single design, the units differing principally in proportions. The two-ton model 76 has a four-cylinder, four-cycle, L head engine with bore of 4⅛ inches and stroke of 5¼ inches, having an S. A. E. rating of 27.25 horsepower, but will develop 36 horsepower at 1400 revolutions. The cylinders are cast en bloc and the water jacket head is separate. The crankcase is two section, so the main bearings and crankpins are very accessible. The crankshaft is a three-journal type, and the camshaft is mounted in three bearings. The main and crankpin bearings are babbitt metal in bronze cages. The connecting rods are drop forged I sections, heat treated. The valves are interchangeable, the stems are hardened and they are enclosed with easily removable cover plates.

The engine is suspended at three points. It is cooled by water circulated by a centrifugal pump through the cylinder jackets and a vertical tube radiator having cast top and bottom tanks. The cooling section can be removed in the event of damage and tubes may be replaced or the holes plugged, so the truck can be worked with temporary repair should necessity arise. The engine is lubricated by a combination of the force feed and splash system, which is exceptionally efficient. The carburetor is a Stromberg with a stove to heat the intake manifold and the ignition current is supplied by a high-tension fixed spark waterproof magneto.

The multiple disc clutch is easily adjustable with four lock screws, and the transmission gearset is a selective sliding gear type having four forward speed ratios and reverse, mounted amidships and suspended at three points. These units are Brown-Lipe make and are readily accessible. The clutch shaft and the driving shaft are equipped with nickel steel universal joints protected by dust proof housings.

The trucks are all equipped with Timken-Detroit front and rear axles, fitted with Timken roller bearings. The rear axles are a full floating type, the driving shafts carrying no load. The worm shafts are chrome nickel steel and the worm wheels are a special formula bronze. The rear axle housings are one-piece steel stampings, being rectangular section at the ends. The differential gears are nickel steel and the driving shafts chrome nickel steel. The radius rods are I beam construction with hardened steel pins clamped into the ends, and maintain the relation of the axles and endure all shocks and stresses. The front axles are I sections and the tire rods are steel tube with hardened steel bushings in the clevis ends. The spindles are forged from vanadium steel.

Titanic front springs are used, these being arched at the center to obviate use of center bolts, which insures against bolt sheering. This spring is guaranteed against center breakage. All springs are semi-elliptic, heavily made, and the spring eyes are bronze bushed. The brakes are internal expanding and the brake rocker arms are solid steel bars with swiveled bronze bushings mounted in brackets on the frame side members, which insures perfect alignment and positively operative brakes. The brake levers are keyed and clamped to the shafts. The brake rods are half-inch diameter with S. A. E. clevises at either end.

The Standard chassis are furnished with complete equipment for body installation. The manufacturer is prepared to furnish any type of body practical for installation.



Standard Trucks in the United States Aircraft Production Service: Left, Used as a Tractor with a Semi-Trailer Hauling a Single Log; Right, Semi-Trailer Loaded with Three Logs in a Forest Road.

RELIANCE MOTOR TRUCK CO. DOUBLES CAPITAL.

The Reliance Motor Truck Co., Appleton, Wis., which was reorganized early this year, will increase its capital stock from $500,000 to $1,000,000. The company manufactures the Badger external spur gear drive rear axle.

FOREIGN COMMISSIONS COMING.

The United States is soon to be visited by purchasing commissions from Serbia, Poland and Roumania for the purpose of purchasing large amounts of army surplus stocks.

SHULER AXLE CO. TO BUILD DETROIT PLANT.

The Shuler Axle Co., formerly of Louisville, Ky., has decided to build a plant in Detroit, Mich., for the manufacture of axles for the automotive industry. The company has increased its capitalization to $500,000.

NEW FOUNDRY IN MILWAUKEE.

The Motor Castings Co., Milwaukee, Wis., intends to start work soon on the construction of a new foundry, which will be 115 by 180 feet and cost about $65,000.

NEW THRESHER FOR FORDSON TRACTOR.

The Port Huron Engine and Thresher Co., Port Huron, Mich., is in the market with a new power thresher for use with Fordson tractors. The thresher is being handled throughout the country by Fordson tractor dealers.

NO FURTHER TIRE REDUCTION.

Financial journals in New York City announce that big rubber companies have abandoned plans for a further tire reduction, which was proposed for May, on account of the high prices of cotton.

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Standard
MADE IN DETROIT USA

MOTOR TRUCKS

TO build the best truck possible to build under any circumstances, regardless of price — to deal fairly and squarely at all times with dealers and purchasers alike — to maintain the good will of all with whom it does business — has been the policy of the STANDARD MOTOR TRUCK COMPANY from its inception.

There is no room for guesswork or speculation in STANDARD manufacture. STANDARDS are the result of years of experience in the heavy haulage field. Every unit that enters into STANDARD construction is the recognized leader in its field, and is selected for its ability to stand hard service.

For this reason STANDARDS have proven dependable, economical of operation, and fully adaptable to efficient service in every line of business. STANDARD reputation for reliability and service has been a big factor in its sales success. It is a real business builder because it brings repeat orders over and over again.

There is room in the STANDARD organization for capable dealers who want to handle a line of permanence and profit. Write about territory.

STANDARD MOTOR TRUCK COMPANY
DETROIT, MICHIGAN

1, 2, 3 ½ and 5 Ton Capacities

"All the Name Implies"



Standard Trucks are used extensively throughout the country — this one hauling capacity loads of flour.

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FOUR DISTINCT PUBLICATIONS FOR GOODYEAR EMPLOYEES.

The Goodyear Tire and Rubber Co., Akron, O., publishes four separate and distinct publications, each of which covers a field of its own. These serve as the mediums for the cementing of the organization, so that the workmen may have some way of knowing the extensive operations of the company.

"The Goodyear, a family newspaper," is a monthly publication having a circulation of 18,000, which not only reaches the employees at Akron, but in all the other branches as well. The stockholders throughout the United States also receive a copy. The contents include every item of interest to Goodyear, from volume of business transacted to the projected marriage of one of the office girls. A page is given over to the interests of the female employees, features stories with reference to the company's activities both in Akron and its branches, talks by the consulting physician and items of personal interest.

"The Wingfoot Clan" is published three times weekly for the 20,000 factory employees at Akron in regular newspaper form and covers all factory activities.

"The Triangle" is a publication for, of and by the salesman, is confidential and not intended for general circulation.

Lastly, the company publishes "The Goodyear Tire News," which has a circulation of more than 58,000 among automobile and automobile tire dealers of the country. By means of the Tire News, issued monthly, the various company activities are brought before the dealers and many helpful ideas are communicated to them.

ESTIMATED EARNINGS OF THE GMC.

Financial journals estimate the earnings of the General Motors Corporation during the first six months of the year at $20,000,000, allowing for the same taxation charges as last year. As operating profits were in excess of $45,000,000, it is apparent that taxes are still cutting heavily into income. The company has prospects of turning out 500,000 passenger cars in the next 12 months.

AIR SERVICE RECRUITS IN DEMAND.

The Air Service branch is seeking 15,000 recruits between the ages of 18 and 40 and is particularly desirous of securing electricians, aviation mechanics, engine assemblers, propeller makers, magneto repairers, fabric workers, etc. Applicants may address Captain Charles J. Glidden, Air Service, U. S. Army, Washington, D. C.

PROMOTED TO TREASURER.

Mrs. E. J. Schoonmaker has been promoted from the cost accounting department of the Bantam Ball Bearing Co., Bantam, Conn., to the position of treasurer, recently made vacant by the resignation of Miss Ruth Edwards.

Touring Continent in Truck Equipped as Pullman

Trucks have been used for seemingly innumerable purposes, but one that is distinctly out of the ordinary is a two-ton chassis equipped with a special body designed to the order of President C. G. Barley of the Indiana Truck Corporation, Marion, Ind., in which Mr. and Mrs. Barley and Mr. and Mrs. Harry Goldthait are shortly to start on an overland drive from Marion to California and return, a distance of more than 4000 miles.

The intention of the party is to be perfectly independent of hotels and to have the same comforts they would enjoy in a Pullman coach, with the additional advantage of being free to go where and when they will. Those who have seen the vehicle have designated it as a "hotel on wheels" and the accompanying illustration gives an idea of the proportions and the external arrangement of the body.

The interior contains sleeping compartments for four persons, these having glass windows that raise and lower. Each compartment contains two wide berths, under which are spacious chests for clothing.

At the rear is a kitchen completely equipped for cooking. There is an ice chest, water tanks and pumps for filling, with running water and a lavatory. A Delco lighting system with a generator and batteries supplies current for 25 electric lamps. At the rear of the body is a platform on which is carried a motorcycle for special errands when off the main line of travel. Compartments of the body contain tools of all kinds, rope and other equipment that might be used for emergencies. The driver's compartment is so designed that the seat becomes a comfortable berth for sleeping. A large canvas tent fly can be attached to the top of the body and stretched to shelter a space 15 feet wide beside the machine.

As will be noted the body is of unusual length, the chassis frame being lengthened to carry it. The truck is mounted on very large Firestone pneumatic cord tires, which may be inflated with a power pump, and the body is equipped with shock absorbers to insure easy riding.

BOLSHEVIKI ATTACK RED CROSS TRUCK IN MONTENEGRO.

An American Red Cross truck was recently attacked by Montenegro Bolsheviki on the Cattaro-Podgoritza road. The chauffeur escaped by forcing the truck at full speed down a winding narrow mountain road on which the truck was at any moment in danger of overturning into the chasm below. The truck was loaded with food, clothing and medicine for the mountaineers, and was held up several kilometers from Cettinje. The chauffeur disregarded the order to halt and the bandits began firing. The men escaped, although several bullets hit the car.

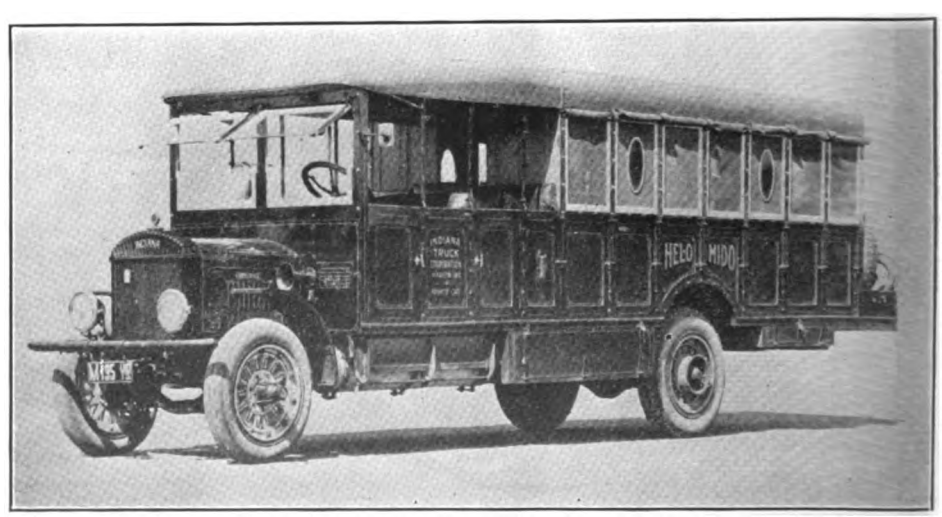
A posse from Podgoritza was sent at once by the executive committe of Montenegro to trail the bandits, but the assailants escaped into the mountains. They are known to the executive committee. Most of them are deserters who fled and hid in the mountain forests and live by pillaging mountain villages.

NEW PLANT FOR GMC AT ST. LOUIS.

The St. Louis Manufacturing Corporation, St. Louis, Mo., a subsidiary of the General Motors Corporation, will erect two buildings on Natural Bridge avenue, near Union Boulevard, at a combined estimated cost of $507,608. Work has been started on a power house at this site to cost $500,000. The investments of this GMC branch, including equipment, will amount to approximately $2,200,000.

SOLDIERS EMPLOYED BY BUICK CO.

The Buick Motor Co., Flint, Mich., is now giving employment to 1400 returned soldiers, and is re-employing them at a rate of nearly 300 a month, or 15 a day. A total of 3003 employees were in service, of which nearly 40 per cent. are back.



Indiana Two-Ton Truck Chassis with Special Body Having Conveniences Equal to Pullman Car in Which Mr. and Mrs. C. G. Barley and Guests Are Driving from Marion, Ind., to California.

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Acason THE OWNER FIRST TRUCKS

ARE YOU SET—

Boston, Worcester, Providence and Fall River are closed, but—some other New England territory is open.

We build 1, 1½, 2, 3½ and 5 Ton capacities.

Fair, square, honest-to-goodness fellows to deal with—

ACASON MOTOR TRUCK CO.

4 years substantial growth

Exclusively Truck Builders

DETROIT, MICHIGAN

(When Writing to Advertisers, Please Mention MOTOR TRUCK.)

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S. A. E. MID-SUMMER MEETING

WITH an attendance larger than at any summer meeting in three years, that gathering of the Society of Automotive Engineers, held at Ottawa Beach, Mich., June 23-27, was extremely interesting to a company of members and guests that numbered approximately 800.

The professional sessions for the presentation and consideration of papers took place from 10 to 1 o'clock each day, and the remainder of the time was given over to amusements, to inspection of a very interesting display made by the Motor Transport Corps and the Ordnance Department, United States Army, to lectures on a diversity of subjects incidental to the programme, and to a series of moving pictures dealing with different phases of the war.

The professional sessions were arranged with the purpose of devoting half the time to discussion, and this plan developed extremely interesting views, for there was keen concern in each subject presented.

One topic that received much attention was the passenger car of the future, and H. M. Crane, L. H. Pomeroy, Herbert C. Snow and W. B. Stout presented papers, Mr. Pomeroy's being read in his absence, and the different opinions were discussed to considerable length. There were no radical views and there was general assumption that whatever improvement there shall be, either with regard to power plants, methods of drive or weight of vehicle, will be attained through practical development or evolution.

Development Must Be Practical.

Attention was directed to the fact that whatever was developed, it must be of such a nature that it will be practical and not experimental, this being the viewpoint of the manufacturer and salesman who must deal with what will be purchasable and useful in the hands of buyers.

One subject that was discussed at length was the possibility of rust-proofing exposed parts of trucks and other utility vehicles. The value of such protection was pointed out by E. T. Birdsall, and the results obtained with different processes were stated by those who had investigated the needs of preventing erosion and electrolytic action.

Military-Automotive Session.

A session was given over to military-automotive subjects, the meeting being presided over by Major Eames, U. S. A., and this included a paper written by Commander J. C. Hunsacker on "Development of NC Boats and Other Naval Aircraft," which was read by President Charles M. Manly of the S. A. E.; a paper by Col. Ralph Miller of the Motor Transport Corps, comment by Capt. Costello with reference to cooperation between the aeronautic department of the United States Army and the S. A. E, and an address by Maj. Gen. C. C. Williams. Gen. Williams, after stating he was present to express the debt of the Ordnance Department to the S. A. E., told that the department had about 40,000 vehicles at the close of the war and between 400 and 500 automotive engineers attached to it.

He pointed out what a very large factor the internal explosion engine was in winning the war and specified what had been done to develop differing types of vehicles, tractors and tanks, all of which were vitally important in the service in France, and these had been produced largely through the instrumentality of the S. A. E.

Army Will Seek S. A. E. Advice.

The United States army now has three sizes of tanks, the largest, the Mark VIII, was the work of Col. H. W. Alden of the S. A. E. Statement was made that at the close of the war the Ordnance Department sent a special board to Europe to study problems of armament and transportation. When this board makes report, although it will be secret, it will be placed before a committee of the S. A. E. for consideration and advice.

Gen. Williams said that the Ordnance Department wanted to maintain the same relations that existed during the war, and while the army regulations do not permit officers becoming members, he hoped that Congress would authorize such changes as would allow officers to avail themselves of the engineering knowledge that was obtainable through membership in the S. A. E.

One feature of especial interest was the illustrated lecture given by Prof. C. A. Norman of the Ohio State University on the internal explosion engine of the future, in which mechanical possibilities were forecasted. He was not favoring radical changes, but specified wherein there appeared to be reasonable ground for belief that engines could be improved with reference to power production and efficiency.

One Paper on Farm Tractors.

The session that was to be devoted to farm tractors followed Prof. Norman's lecture and consisted merely of a paper presented by Prof. E. A. White of the University of Illinois, which was criticised by Prof. J. L. Mowry of the University of Minnesota. In general the two expressed views that were diametrically opposite.

Prof. White reached four conclusions: Improving the quality of materials used in tractors and implements; increasing the mechanical efficiency of tractors and implements; increasing the rate of doing work either by more speed or larger outfits, and combining the various units in such a manner as to make them more convenient for one man to operate. He believed that the tractor in design or construction had not reached a stage of development where standardization was desirable. He was of the opinion that so far as size of tractor was concerned that it was a question of economic balance between size and speed. That is, if a two-plow tractor with three miles speed an hour could be built and operated more economically than a three-plow tractor driven two miles an hour, it would be the most desirable type, provided that the machine could be adapted to other requirements.

Prof. Mowry and Prof. White believed that separate types of tractors would be built for farm work, one for heavy and one for light work. The former maintained that the farmer wanted good implements and was willing to pay the prices for them. He believed that plowing speed should be increased to three or 3½ miles an hour. He was convinced that the two-plow tractor would eventually be discarded and be replaced by three and four-plow types, generally by the size now rated for four plows, but which might be rated as three plow.

Exhibition of Army Equipment.

The exhibition of motorized equipment made by Ordnance Department of the United States Army at Jenison Park, was witnessed by a large company besides the members of the S. A. E. The exhibit consisted of about 30 carloads of trucks, tractors, tanks and motorized field machinery, some of which had been captured or surrendered by the Germans and some of which was loaned. The tanks were demonstrated, climbing into and out of a basement where a house had been destroyed by fire and knocking down several dead trees.

There was much interest manifested in two German tractors, which were examined by the engineers and the characteristics of construction were carefully noted.

A lecture given by Col. Arthur J. Slade on motorized equipment in the service of the Motor Transport Corps overseas and the conditions in which service was maintained, which was illustrated by a series of moving pictures, was of especial interest.

The tractor standards committee made recommendation at the meeting of the standards committee that a new formula for tractor horsepower rating be approved. The formula is based on engine dimensions and crankshaft revolutions. It was referred to the tractor division of the standards committee for further consideration, after the committee was tied for approval or disapproval and Chairman B. B. Bachman did not care to break the tie.

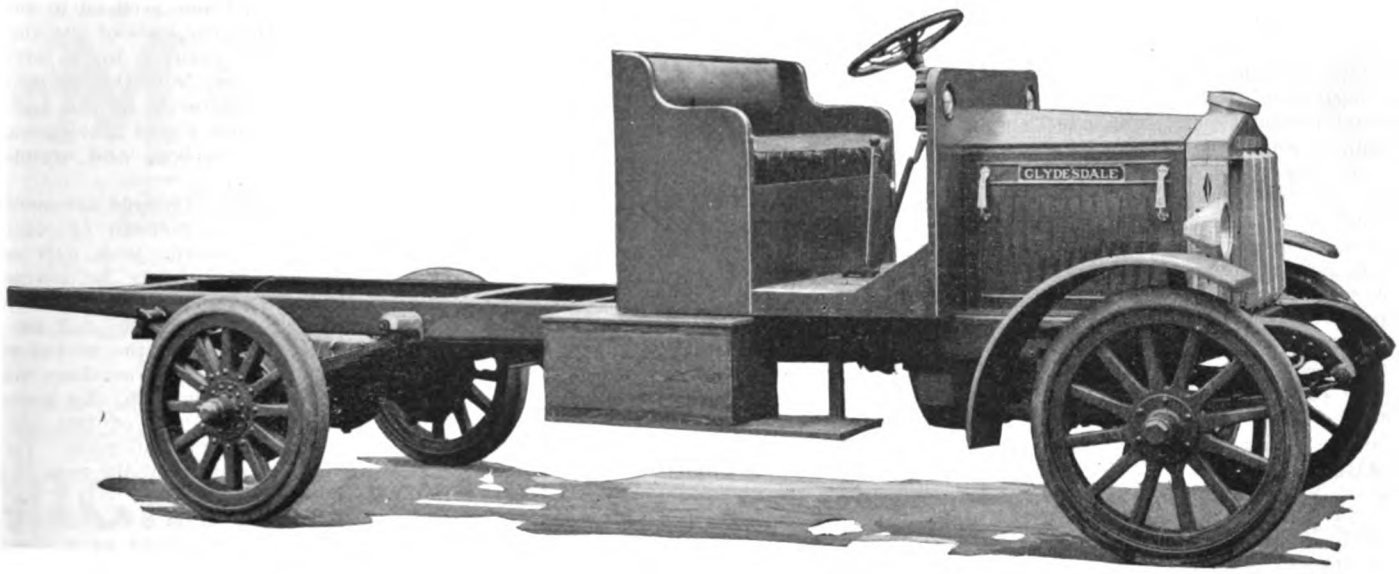
A suggestion was made that the formula might be recommended as a suitable commercial rating for the tractor and thresher division of the National Implement and Vehicle Association, but this was not adopted.

The possibility of holding an exhibition of parts and accessories in connection with future summer meetings was discussed, but not determined, the location for holding a meeting and exhibition combined being a subject that required careful consideration.

During the meeting the committee that will nominate officers for the annual meeting of the society held a session. The candidates will not be announced until later in the year.

J. Gustaf V. Lang, manager of the export department of the Master Trucks, Inc., Chicago, Ill., left New York July 8 for a business trip to Scandinavia.

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1-Ton 2 New Clydesdales 1½-Tons

Equipped With "Driver Under the Hood"

For some time there has been a call for a lighter model of Clydesdale Trucks designed for lighter loads and faster delivery. To meet this demand, we have brought out two new Clydesdales: Model 32, 1-ton capacity and Model 42, 1½-ton capacity.

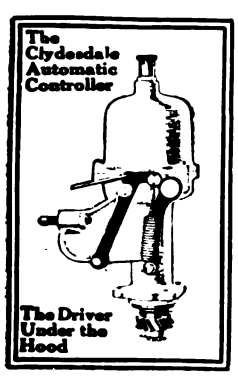
To owners of Clydesdale heavy duty models, we need only say that these sturdy little trucks embody the same constructional features of all the heavy duty Clydesdales which have proven so sound from both design and structural standpoints.

The deep, tapering frame, the massive aluminum shell radiator, heavy brackets and spring shackles, long, wide and flat springs, the sturdy axles and wheels give one an idea of what little giants these trucks are in strength, and they will perform work which really seems impossible for a truck of their capacity.

Both the new models are equipped with the same automatic controller, or "Driver Under the Hood", as the heavy duty models. This feature will be especially appreciated on the new models which will be driven in down-town traffic, as it absolutely will not allow the motor to race. Country driving is also made easier, the driver under the hood controlling the motor and leaving the driver on the seat free to watch the road and steer.

The universal satisfaction given by Clydesdale trucks all over the world makes them a valuable asset to a dealer, because they do bring repeat orders. Do you know the sales possibilities in your territory?

No Other Truck Has It



The "Driver Under the Hood" is not an ordinary governor. It automatically and skillfully regulates the flow of power to immediately meet every changing road or load condition. It keeps the speed constant, prevents racing of the motor and clashing of gears.

1 to 5 Ton Capacities

CLYDE CARS COMPANY, CLYDE, OHIO

CLYDESDALE

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CHINESE AGENT INVESTIGATING AUTOMOTIVE INDUSTRY.

Kingsu Whang, formerly a member of the parliament in China and now here as special commissioner for investigating economic conditions in America, has conferred with the Foreign Trade Department of the National Chamber of Commerce, as he is especially interested in the automotive industries. He says China is awakening to the need for better roads and the efficiency of motor transportation. According to Mr. Whang there are more than 1,000,000 soldiers in the Chinese army, most of whom will be put to road building during the coming year.

"HAUL-AGE" A NEW GARFORD PUBLICATION.

The new dealer publication of the Garford Motor Truck Co., Lima, O., which made its initial appearance in May, is known as "Haul-Age," which name was selected from scores of suggestions submitted in a prize contest.

While the new publication deals primarily with the interests of Garford distributors and interests there are many articles of timely interest to the entire automotive interests. Julian M. Chase, advertising manager of the Garford Motor Truck Co., is editor of the journal, which is published monthly.

NEW DIRECTOR IN THE MORRIS, RUSSELL & CO.

Hector C. Adams, for five years in the sales department of the International Motor Co. and formerly truck sales manager of the Packard Motor Car Co., has now become one of the directors of Morris, Russell & Co., Inc., 14 Church street, New York City, exporter of automotive products. He has just returned from Paris and London. While in London he formed the British-American Industries, Ltd., which will take care of the distribution and sale in Great Britain, France and Italy of automotive products made in this country.

Platform Truck Body Convertible for General Uses

An extremely serviceable type of body has been designed and built for Eggert Bros., Akron, O., which can be quickly converted to serve for many practical purposes. The design is comparatively simple and the construction is such that the body has unusual utility, the cost is small as compared with interchangeable bodies and much time can be saved whenever a particular type of truck is required. As a matter of fact with this equipment nearly every form of body in general use can be adapted, aside from those that are enclosed.

The truck chassis is equipped with a hydraulic hoist, the power being taken from the transmission gearset, that is operated from the driver's seat. The primary body is a heavy platform of large size, with a removable forward end that is fitted for mounting with stakes fitting steel pockets. The deck of the platform and the forward end are covered with thick sheet steel sheathing that is water tight to protect the chassis so far as this is practical.

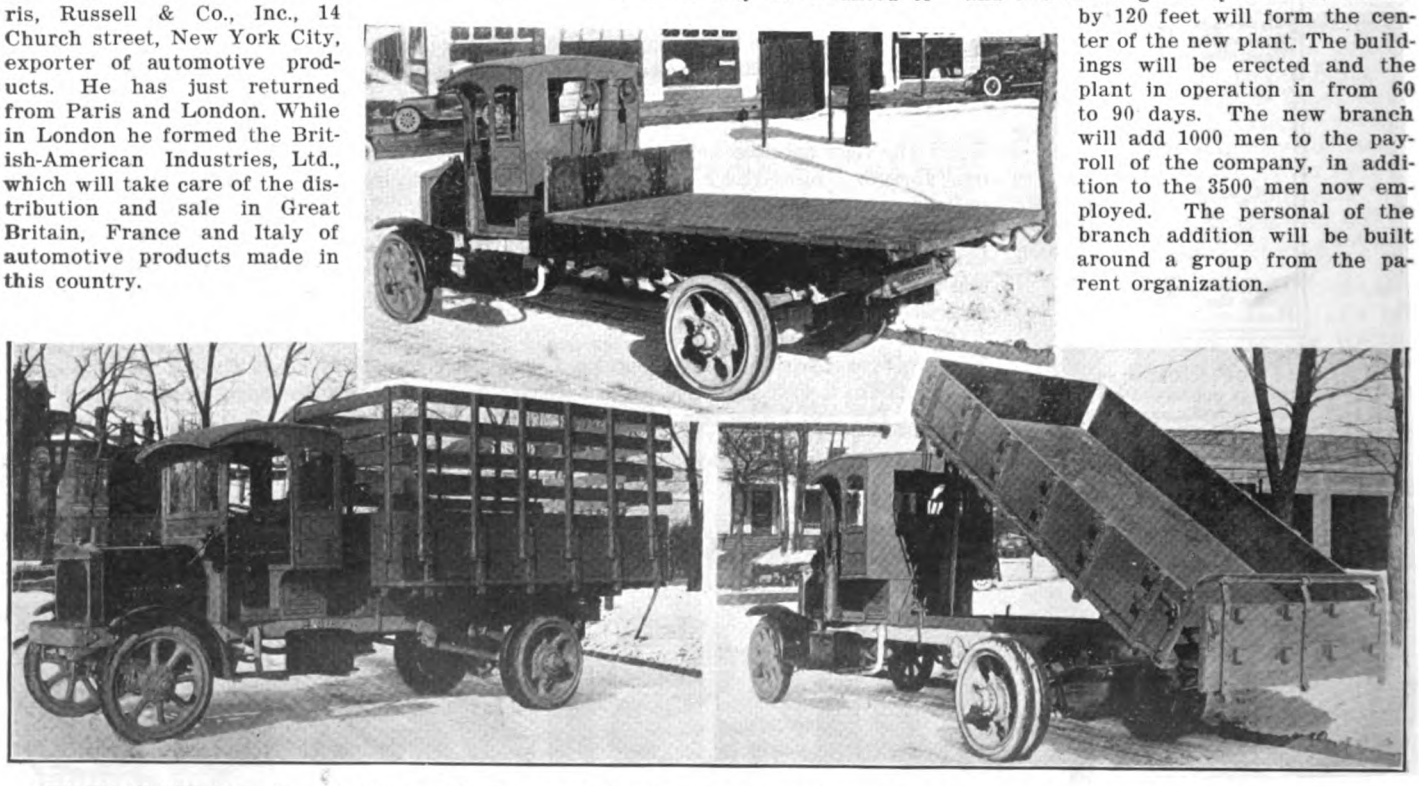
The edges of the platform are armored with steel and at the ends of each of the six bolsters is a steel pocket to take the ends of the six short heavy stakes on each side board. The side boards are sheathed inside with steel. The forward ends of the side boards fit the forward end closely. The tail gate is designed to have double action—that is, it may be secured to the rear end of the platform to drop to any desired angle, and is held by a chain, or it may be mounted to swing from a steel frame secured to and extending from the rear ends of the side boards, when it is secured by a latch that may be released from the driver's seat. The stake platforms of the body are reinforced by steel straps that extend the full length of the body and around the forward corners.

The stakes of the side boards are solidly bolted to them, and ahead of each stake on the side boards is a pair of steel pockets in which may be placed the ends of the stakes of the rack sides, and on the front board and the tail gate are similar pockets to take the stakes of the end sections. The rack sections are built with five side rails each, the lower rail resting on the tops of the side boards and the front and tail gate. The sections may be clamped solidly near the top.

The body is installed on a Federal 3½-ton chassis. It may be used as a clear platform; the side boards may be installed with a lowering tailgate and it will serve as an express body, with the sideboards and the top swinging tail gate it may be used as a dump truck, and with the rack sides it may be used for carrying furniture or any other bulky freight. The body can be covered with a tarpaulin and the cargo fully protected. As the body is sectional it can be handled by one man when conversion is necessary and it may be adapted in a very short time with a wrench.

NEW TIMKEN BEARING PLANT AT COLUMBUS, O.

The Timken Roller Bearing Co., Canton, O., will build a new plant at Columbus, O., costing over $1,500,000. A main factory building 600 by 300 feet and two buildings 60 by 150 feet and 80 by 120 feet will form the center of the new plant. The buildings will be erected and the plant in operation in from 60 to 90 days. The new branch will add 1000 men to the payroll of the company, in addition to the 3500 men now employed. The personal of the branch addition will be built around a group from the parent organization.



Federal 3½-Ton Chassis with Convertible Body Built for Eggert Bros., Akron, O.: Above, Platform Without Stakes or Sides, but End-Discharging with Hydraulic Hoist; Lower Left, with Sides, Tail Gate and Racks for Bulky Loads; Lower Right, with Sides and Swinging Tail Gate for Rear Discharge.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 8. PAWTUCKET, R. I. AUGUST, 1919.

HIGHWAY HAULAGE ONLY INSURANCE OF NATION'S PROSPERITY

Truck Industry's Opportunity Is Promotion of Transportation So Far As Possible Independent of Railroads —Public Service Will Greatly Lessen Cost of Freightage

UPON the development of highway transportation depends in very large measure the industrial and commercial prosperity of this country.

This development is in turn dependent upon the policy and activities of the power vehicle industry.

This does not mean activities in the sense of trade promotion as undertaken by general or class organizations.

It does mean dealing with and promoting transportation as the greatest single factor that influences national progression.

And unless this promotion is inaugurated and carried on with carefully planned system, with all the force that can be brought to bear, the results will fall far short of the possibilities.

There are those who will affirm that the sale of trucks depends entirely upon the demand created by the use of power vehicles. This might be true of conditions that once existed, but it is no longer true because transportation is now upon the threshold of a revolution of methods and policies.

This change is patent to men who study transportation. It should be obvious to those who have knowledge of the economic and social conditions that have developed, very largely as the result of the world war and the attitude of the people generally.

It is today the one great question that must be dealt with by the government and the only solution is use of highways and power vehicles. There should be cooperation of the industry and trade with the government to the fullest degree, and in ratio to the development will be independence of what can consistently be regarded as the greatest burden ever placed upon a people.



Typical Equipment of a Service Operating Between New York City and Baltimore Through Philadelphia, That Originated from War Needs, Has Constantly Increased.

If there is comment necessary it is to emphasize a condition that is not believed by the people to be serious. The public is not informed of the possibilities resultant from the general plan of transportation. But no better illustration is needed than the strike of the railroad shopmen that took place during the first two weeks of August.

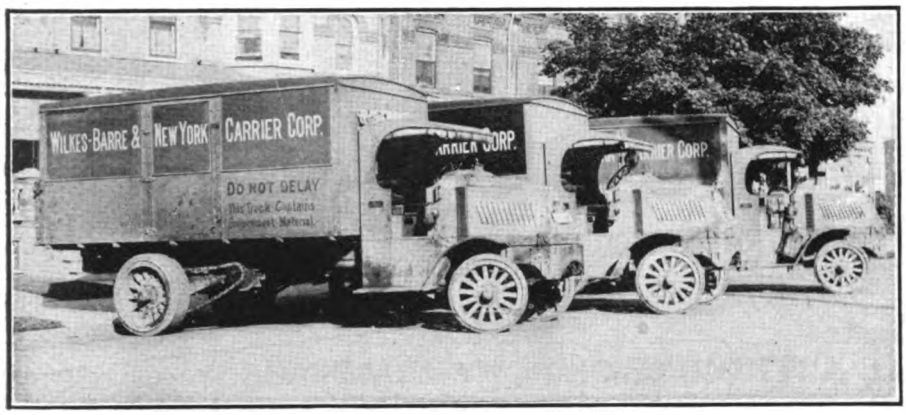
In many sections of the country the shops were abandoned by the workers. Repairs could not be made and trains could not be operated. Service was reduced each day until there was extremely limited communication between the largest commercial centres.

While not entirely suspended, few passenger trains were dispatched. Embargo was placed on freights and only fuel, food and ice were accepted, and express service was in many cases abandoned or, if received, accepted subject to unlimited delay.

Strangely, the people did not realize the menace of the situation. The public seemingly assumed the strike should be dealt with by the government because the railroads are under Federal administration. Fortunately, the workers resumed work before industries were seriously affected or food supplies so diminished that an actual shortage was experienced.

Federal control was no insurance against retardation or cessation of transportation from strikes or other causes. With reference to labor centralized control merely accentuated the danger, for the operatives were united in their demands and acted collectively instead of being forced to deal with separate com-

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Trucks That Are Operated Direct Between New York City and WilkesBarre, Pa., Affording a Service Superior to Railroad and Decidedly Faster.

panies, as would have been the case under private ownership.

The result of the railroad embargoes was accumulation of shipments at the terminals. There was no accumulated freight for delivery. In some instances prospective shippers were compelled to congest their own storehouses with products that would normally be shipped.

Different sections of the country were affected differently. In the New England and Atlantic coast states, where the people depend upon industries and agricultural operations are small or incidental, transportation must be continuous. Food and raw materials must be received and products shipped. In states where agriculture is the principal industry the volume of freightage is largest following the harvests and is much diminished during the remainder of the year.

Where farming is largely engaged in the people are more independent, so far as food supplies are concerned, than are those of industrial sections. Only when there is great movement of crops from the farms to markets and consumers is there ever shortage of railroad facilities. This condition is continued for a comparatively short period and really more concerns the buyer than the farmer.

But near the large commercial centers, especially in the East, where the food must be obtained from distant points, agricultural operations are rarely sufficient to meet daily demands and rarely can accumulation be made for future consumption. Experience with storms, floods or other disaster, has proven that seriously obstructed railroad traffic is a condition fraught with grave possibilities.

As the strike of the railroad repair shopmen was comparatively short, industrial and commercial operations were not materially retarded, chiefly due to the fact that business men, which the experience gained during the war period, turned to the use of power trucks for all emergency needs and blindly continued with no definite plan for future operating. In other words, they generally continued with the hope that the strike might be terminated before they were compelled from lack of raw materials or stock to suspend or curtail operations.

That the strike was at a time when conditions were extremely favorable to the people and to the industries, no one will deny. Had it taken place during winter weather there is no question that much hardship and probably suffering would have followed.

The fact that business men without exception turned to trucks as the only practical transportation available, demonstrated conclusively their belief in the possibilities of highway haulage. To what extent truck freighting was resorted to cannot be definitely stated. Probably the greatest use of them was made in the New England and Atlantic coast states, where the commercial centers are comparatively short distances apart and the tonnage handled is necessarily considerable.

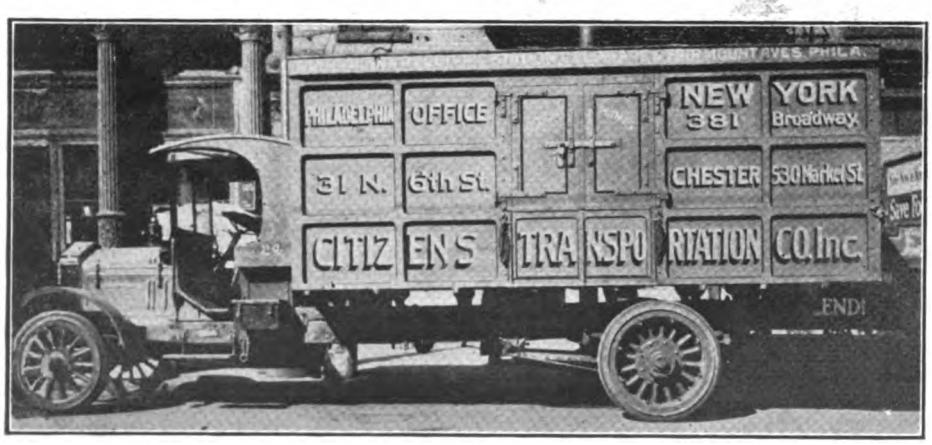
Concerns that operate power trucks had a decided advantage in that they could by increasing their crew at least double the mileage driven and the tonnage hauled. Haulage contractors could, by operating continuously, if need be, do from two to three times the work that would ordinarily be done, if the hauls were long, and by carrying freight either way the trucks could be made exceptionally productive.



Two of the Machines of a Public Service Corporation Operating from Chicago to Towns and Cities Within a Radius of 75 Miles, That Has Steadily Developed in Territory Covered.

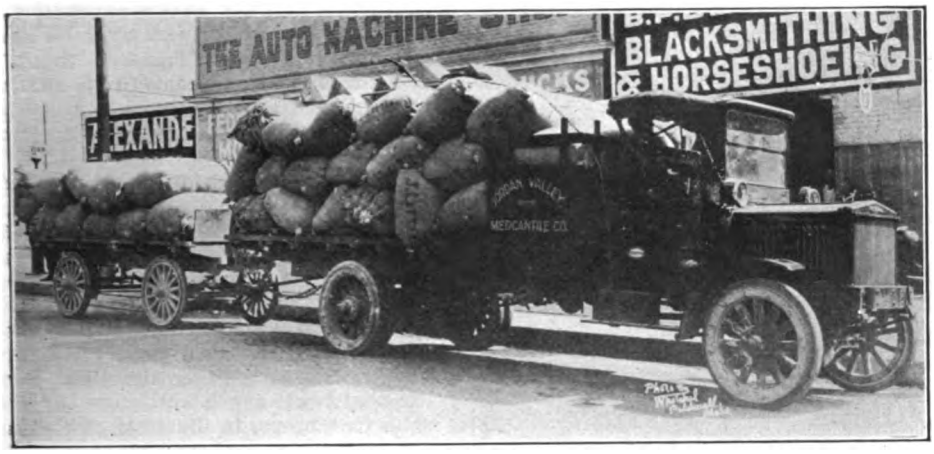
Haulage contractors with a view to business in some instances advertised that they could handle a given tonnage daily within a stated radius. Others specified generally the service afforded. Some truckmen canvassed their customers and undertook to carry out haulage projects that were necessary because of freight embargo. Business men who sensed the condition engaged truckmen or pooled with truck owners to do haulage. To detail the transportation needs of business men would be impossible in the limited space available.

The necessity with many concerns was pressing, but continuous industrial operation was not wholly dependent upon transportation, for the railroad strike was not of sufficient duration to necessitate curtailment of production or suspension, but it was nearly an acute stage when the railroad men resumed work.



One of the Units of the Citizens' Transportation Co., Philadelphia, That Maintains a Regular Daily Service Between Bristol, Pa., and New York City Through Philadelphia.

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A Truck of the Jordan Valley Mercantile Co., Jordan Valley, Ore., That Maintains a Regular Service to Caldwell, Ida., on the Oregon Short Line Railroad, 70 Miles Distant—This Is a 3½-Ton Federal and Trailer, Laden with Wool, a Five-Ton Freight.

If the strike had continued another week business would have been seriously affected and industry would have been materially retarded. This would have been due to shortage of raw material and fuel, which are generally, with reference to eastern industries, brought from a distance. Truck haulage would not in any sense have afforded relief of a substantial character, but there is no doubt that moving what is classified as short haul railroad freights by highway vehicle would have lessened the burden upon the railroads, which would be free to handle the long haul tonnage.

Were the short haul freights now shipped by railroad transported by power truck the tonnage offered to the railroads would be much decreased. There is no possibility of estimating what ratio of the total this would be, but obviously, this is the least productive of all freightage. The long hauls are the most productive.

Railroads have been forced to expansion to meet the demands of business. Were the short haul freights now carried diverted to highways there is little doubt that the existing trackage and terminal facilities, and the same number of rolling stock units now operated, would be sufficient for a considerable period without additional investment other than for maintenance and replacement.

The needs of the railroad so far as increase of tracks and equipment is concerned is not known. These would necessarily be based on continuance of the short haul freights.

Practically without exception all of the railroads now operated by the government are losing money. This loss is now borne by the nation, but if the properties are returned to the owners these deficits cannot continue and rates must be increased.

The railroad freight rates are today the highest ever known, and yet there is reason to believe that these will be increased approximately 33 per cent. if the companies are to be made productive. This increase does not mean better service, but simply an additional charge that must be added to the cost of the product to the consumer.

The increase of freight rates is regarded as inevitable. Statement may be interpolated here that there is apparently no limitation because of the attitude of the operative and the fact that at present industry and commerce is absolutely dependent upon continuance of railroad transportation. Seemingly there can be no relief until the people realize the possibilities of highway haulage and divert to trucks all freights that can be practically carried by them.

There are facts that have apparently been given little consideration by the power vehicle industry. They are decidedly worthy the attention of every business man and of every one engaged in the industry and trade. The first is the potential market for trucks. Let us assume that there are 25,000,000 animals in the United States used for work purposes. Of this number accept as a fact that 5,000,000 can be used for work for which trucks and farm tractors cannot be used. This leaves 20,000,000 horses and mules that can be replaced with trucks. Further assume that a truck will replace five animals. This is a larger number than is generally accepted, but it will serve for the illustration.

There is now in use in this country approximately 500,000 trucks, excluding converted car chassis. This may be substantiated by the following facts:

Total truck production of record, to Dec. 31, 1918	614,437
Total truck production to Dec. 31, 1911	46,096
Total production, Jan. 1, 1912, to Dec. 31, 1918	568,342
Built to United States army contracts, to Dec. 31, 1918	90,727
Total commercial production, 1912-1918 inclusive	477,615
Less exports, 1913-1918 inclusive	65,218
Total available for domestic sales	412,397

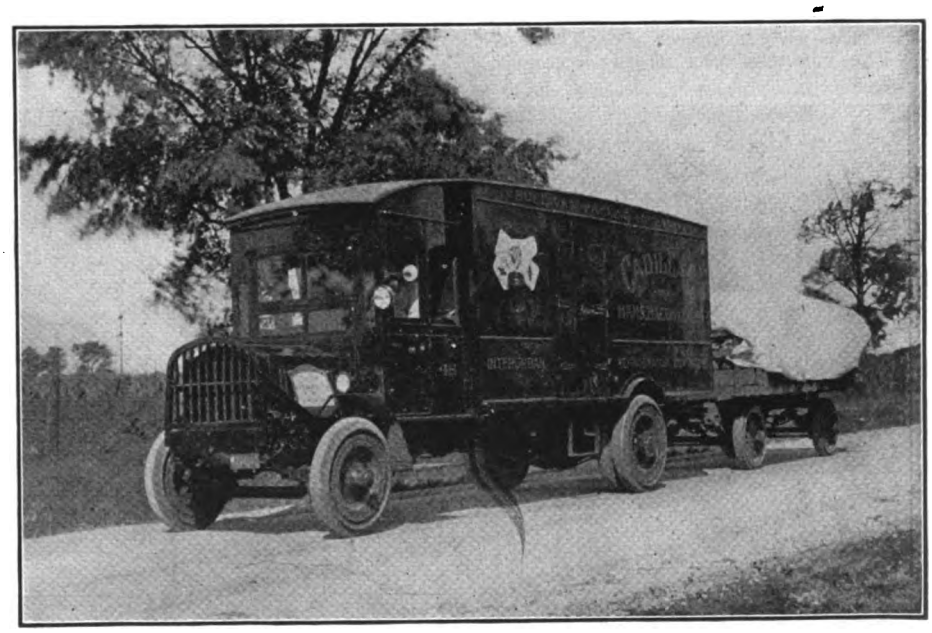
The total estimated production of trucks for 1919 is 327,930, of which 36,227 are due on government contracts, leaving a total of 291,703 available for export and domestic sale.

No allowance has been made in the total of 412,397 for wastage from various causes. Considering the period of seven full years (without 1919) the shrinkage to 350,000 is not excessive. The estimate of 327,930 for 1919 includes 100,000 Ford trucks, and it is probably considerably in excess of actual production.

If the total of 350,000 is a fair estimate, and the output of trucks thus far this year is 150,000 or thereabout, the assumption of 500,000 vehicles in use is not far wrong. But in any event it will serve for the illustration to be made.

To replace 20,000,000 animals with power trucks in the ratio of one truck for five horses, 4,000,000 vehicles would be necessary to meet the demand, and this may be stated as a fair estimate of the potential domestic market. The only question is the period of time that must elapse before what may be regarded as conversion is consummated.

But there is another aspect that would demonstrate that the market is not confined to replacement of animal equip-



A Special Refrigerator Body on a Packard Chassis, Used by the Sullivan Packing Co., Detroit, with Trailer, for Delivery of Meats to Customers Within Radius of 50 Miles.

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How a Maryland Farmer Utilizes His Truck: It Hauls Products to the City, Serves as a Market Stand and Returns with Farm Supplies, Besides Being Extremely Useful for General Work.

ment, but is limited by the short haul tonnage that can be diverted from the railroads and profitably hauled by trucks. This volume has never been estimated, but it is very large and is constantly increasing.

The total railroad mileage of the nation, exclusive of terminal and switching companies, is close to 260,000. There is approximately 2,500,000 miles of highway in the country, exclusive of city and town streets, and this is available for transportation by truck. In other words, for every mile of railroad there is at least 10 miles of highway, and the roads are open to the use of the public with the ordinary restrictions.

The haulage that may be done with power trucks is very large. Truck transportation projects that have been developed to afford service and earn profitable revenue are numerous, but they are as a drop in a bucket as compared with the possibilities for concerns that are organized to handle freights scientifically and economically.

The business men of any community who will contribute to the freight of power truck transportation companies will first of all promote a service that will make them to a greater or less extent independent of railroads; they will be developing service that they can absolutely control with reference to their own and the needs of the community; they will, if stockholders, receive a profit on their own freight haulage, which they would not otherwise obtain; they will profit through better satisfaction of customers and will insure themselves against competition that might otherwise be developed.

As business men they have a voice in the construction and maintenance of the highways over which the trucks are driven. They can influence legislation that might be prejudicial to the operation of public service. They will have the benefit of competition wherever two services are operated, and if they operate their own equipment they will be beyond strikes and other conditions that may more or less retard or interrupt business.

The possibilities for coordination of public service of the character outlined are extremely large. Transfers could be made from the one concern to another and shipments could be made considerable distances for comparatively low rates—at least charges that would compare favorably with those of the railroads.

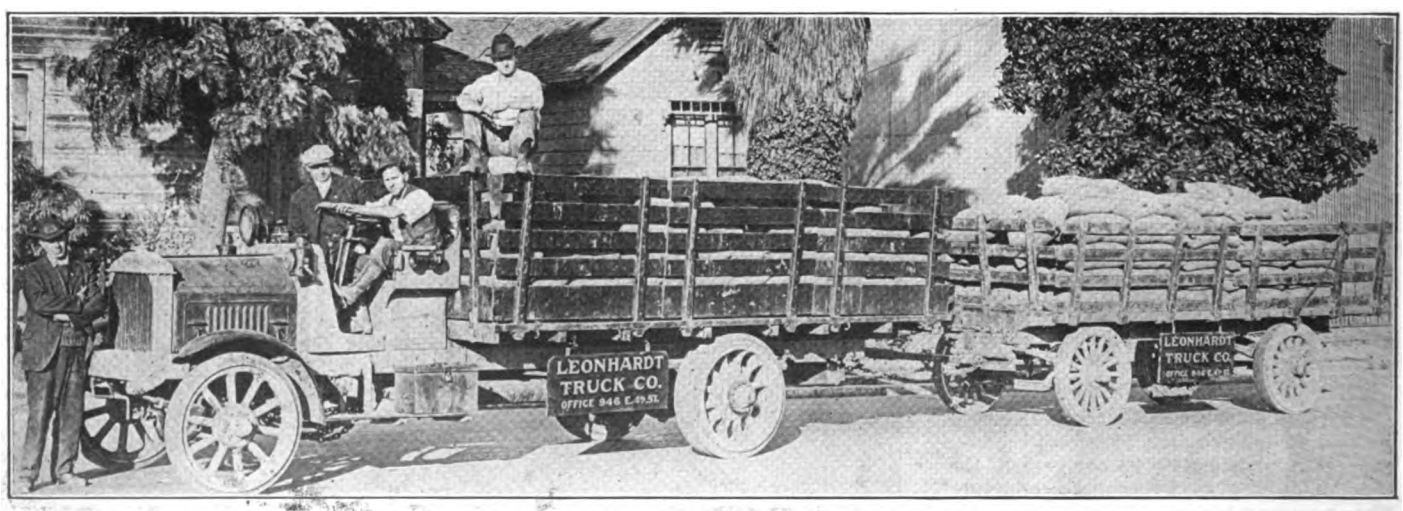
The service of this character would be productive the entire year. This would differentiate it with what might be classified as incidental or variable. For instance, haulage between commercial centers would have ideal production with tonnage hauled in either direction. Service that was dependent more or less upon food crops, to illustrate, which are hauled but a part of the year, would necessarily have to establish charges that would yield sufficient revenue to make a profit. Such rates could not be the same as would be charged by a concern that was handling what could be regarded as stated tonnage.

The nearer freights could be to a given volume the better the service could be with reference to charges. There would be no business requirements that could not be practically dealt with and there would be sufficient reserve to serve the people in any emergency.

Public service concerns operating highway haulage equipment could be organized and equipped to the best ideals of engineering and economies. The facilities for handling freight could be what would be most productive of economies of time and labor. The administration could be to the height of system. The interests of shippers could be considered from every angle.

LABORATORY MANAGER FOR OAKS COMPANY.

R. L. Coombs, for two years assistant instructor of physics at the University of Wisconsin, who later served for two years as an officer in the Signal Corps, A. E. F., has been placed in charge of the experimental laboratory of the Oaks Co., Indianapolis, Ind., manufacturer of radiator cooling fans for tractors, trucks and passenger cars.



Equipment for Crop Movement: A 3½-Ton Federal Truck and Trailer, Owned by the Leonhardt Truck Co., Los Angeles, Cal., That Does Haulage Within a Radius of 100 Miles, Carrying Freights of 12 Tons, Laden with Cargo of Bagged Beans from Camirillo for Los Angeles.

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MILK HAULAGE BY TRUCK FASTER AND CHEAPER THAN BY RAILROAD

MILK is used in very large volume in cities and few realize the quantity that must be transported from the farms and dairies and distributed—at least not until one begins to express facts in terms of gallons or cans. Detroit has upwards of 1,000,000 inhabitants and the consumption of milk in that city is large. Milk is brought considerable distances and careful attention must be given to handling because of its perishable character. One concern distributes thousands of gallons daily, and in addition to its own equipment it has a contract with Ira Wilson & Son to deliver milk from towns within a radius of 42 miles. Not all of this zone is served, but no less than 12 distinct hauls are made daily with 15 trucks. The longest distance is 42 miles and the shortest 13, and the average haul is 24.75 miles measured between terminals. The number of cans hauled ranges from 20 to 270 and average is 115 cans of 10 gallons each.

Originally Ira Wilson had a contract to do haulage with animals between Elm and Detroit, an 18-mile haul, making delivery of creamery products. Later he increased the contract to include Plymouth, Stark and Perrinsville, respectively 32, 19 and 20 miles from Detroit. Six years ago Charles Wilson, a son, who was in business with his father, urged buying power trucks. Now the company operates 15 machines, hauling from 12 different stations.

The fact that the volume of milk produced and the number of cans to be transported varies considerably from day to day means that the trucks must have capacity to take all the milk offered and yet there is no assurance that they will have capacity loads. General character of the work done may be gained from this tabulation:

Station	Miles to Detroit	Average Daily Cans Hauled
Elm	18	100
Plymouth	32	200
Perrinsville	19	50
Stark	19	20
Canton	20	65
Inkster	13	20
Willis	36	270
Belleville	28	200
Cherry Hill	28	98
Holland	13	35
Utica	25	180
Milan	42	140

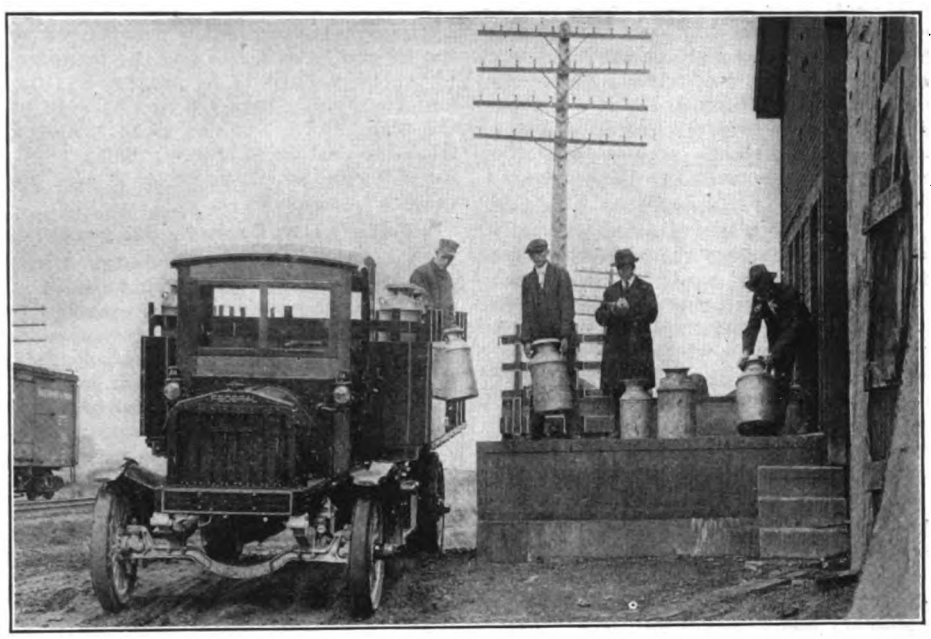
The Detroit creamery establishes the stations and operates them, Wilson & Son having the contract for transporting the milk from them to Detroit. The farmers bring the milk to the stations. It could be sent by train, but this would mean delays unless the business of the company could be developed on the basis of train schedule and the deliveries to the stations were made to meet the conditions of the train service. Obviously, this is impossible. The power truck contract service, which has been developed to meet the needs of the business can be expanded and varied as occasion requires.

Elasticity of Equipment Necessary.

Having sufficient elasticity of equipment to haul all milk supplied means that there must be some reserve above normal requirements, for additional trips cannot be undertaken. All of the 15 trucks are not always in use, and there are times when the truck routes must be varied somewhat to carry all the freight.

To illustrate, the haulage from Plymouth is done with a Federal tractor that hauls a semi-trailer that has a capacity for 204 cans of milk, which weighs 11 tons 400 pounds. From time to time the excess cans, and these will range in number up to 40, are hauled on a four-wheel trailer by a Federal truck that usually serves the Elm station.

At Willis the average daily number of cans received is 270, and three trucks



Loading One of Ira Wilson & Son's 3½-Ton Federal Trucks with Milk for Haulage to the Central Station of the Detroit Creamery. This Concern Operates 15 Machines in This Service.

are centred at this place, each of which starts with 90 cans or thereabouts and these all stop at Belleville, which receives about 200 cans daily, they taking the surplus after a truck with a capacity of 130 cans has been loaded for Detroit. The three trucks usually take on 70 cans at Belleville.

Careful Arrangement of Routes.

Another route is from Cherry Hill, which start is made with 98 cans of milk, and at Inkster the truck takes on 35 cans that are hauled to that town by horse team. The Detroit creamery has a condensing plant at Goodrich that is operated as the milk is received for it, and milk is hauled from Milford, which is 50 miles distant. This must be covered once each way daily, and the truck on this route is worked with two drivers.

The Milan route is the longest operated into Detroit and this will probably be increased. During the summer months the milk freightage is heaviest. But during those months the roads are as a rule in the best condition. There are all kinds of highway, there being concrete, macadam, gravel and dirt surfacing, and the haulage depends to some extent on weather and loads carried.

The creamery company has a record of service that is made up from cards that are filled by the drivers and either delivered at the general office at Elm or mailed and these show the station from which the truck is operated, the number of filled cans hauled, the number of empty cans returned, the number of the truck, and the fuel and lubricant used, the prices paid for supplies bought or work done, the name of the filling station or garage or shop where purchase was made, and such other detail as is desirable.

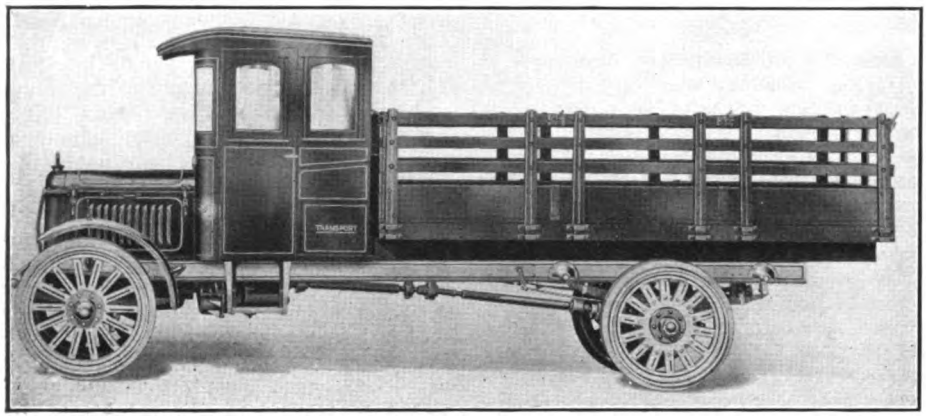
Wilson & Son has a service station at Elm where the trucks are adjusted and repaired, and the equipment is kept in good condition. Inspection is frequent and overhauling is done as often as is necessary. The one thing absolutely necessary is dependability of service and the results with the trucks is far superior to anything that could be afforded with railroads.

SEPARATE TRUCK SHOW FOR NEW YORK.

Show officials of the National Automobile Chamber of Commerce of New York are looking for a building to house trucks separately from passenger cars and accessories during the national show in January. The main show will be in the Grand Central Palace, and early indications point to a large array of exhibits.

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FULL SERIES OF TRANSPORT TRUCKS



Transport Two-Ton Chassis with Full Equipment, Enclosed Driver's Cab and Panel and Rack Body.

DEVELOPMENT of the plant of the Transport Truck Co., Mount Pleasant, Mich., has been necessitated by the demand for Transport trucks, and the new factory of the company is practically ready for production. The company, of which Milton A. Holmes is president, has been actively operating but a comparatively short period, but the growth of the concern has been remarkable.

The company was organized primarily to produce a single standardized two-ton chassis, the design being perfected with a view of manufacturing in considerable numbers, and a factory was established at Mount Pleasant which was believed adequate for at least the immediate needs. A sales organization was created and the demand for chassis of other sizes was such that the company planned to build a 1½-ton size.

Then the factory was projected and this has been built on a 21-acre tract of land on the Pere Marquette and Arr Arbor railroads, which is adequate for large expansion. This has been equipped with machinery and tools for building two additional sizes, and the company is preparing to build a one-ton chassis, and by the end of the year will have a fourth size, a 3½-ton, in production, so that the series will number four—one-ton, 1½-ton, two-ton and 3½-ton.

The new factory unit is constructed so that it can be added to and the manufacturing is planned to be progressive, the materials being received at one side of the plant and assembled as it is moved from one section to another, being ready for shipment when the other side of the factory is reached.

Factory Unit Carefully Designed.

The factory is carefully designed and the building is the latest development in saw tooth roof construction, nothing being neglected that will in any way contribute to the convenience and comfort of the workers, the lighting, heating, ventilating and sanitation being primary factors of the design. To facilitate receiving and shipping railroad sidings are extended from the main tracks into the factory yard.

The machine tool and general equipment of the factory is the best obtainable to economize time and labor, and the expectation is to obtain a very high degree of efficiency and the best of workmanship.

The chassis now produced and planned are as follows: Model 20, one ton; model 30, 1½ tons; model 50, two tons, and modle 70, 3½ tons.

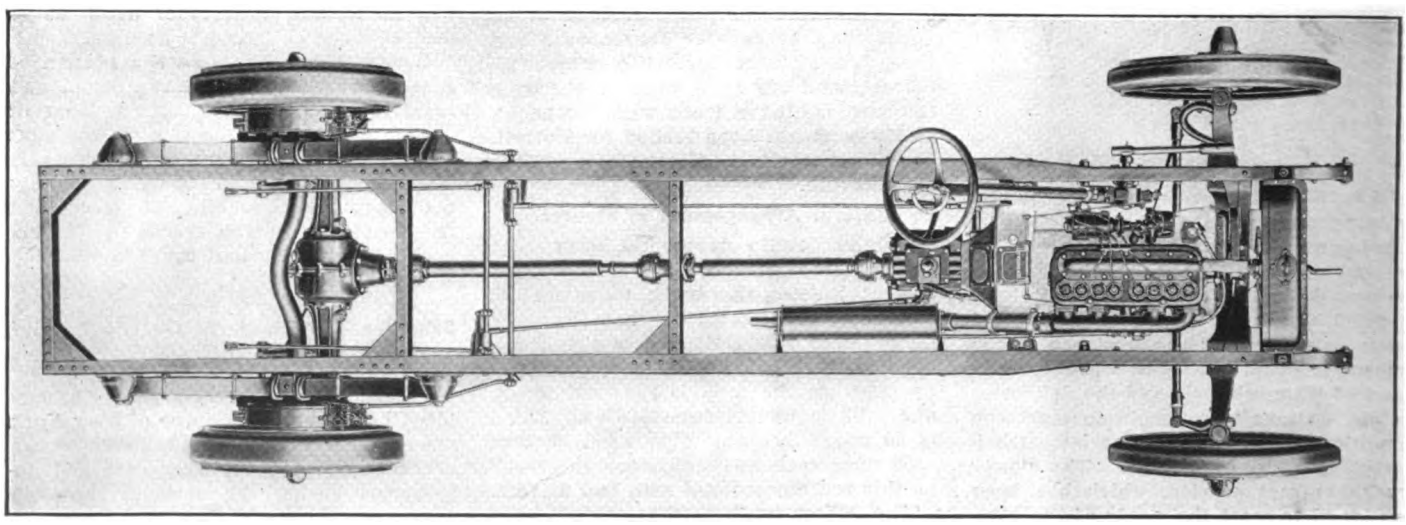
The design of Transport trucks has been standardized and the only difference in the chassis is that the two smallest sizes have thermo-syphon cooled engines and transmission gearsets having three forward speed ratios. The engines of the two larger chassis are cooled by circulation of water forced by centrifugal pumps, while the transmission gearsets have four forward speed ratios. In practically all other details the machines are identical, but, of course, differ in dimensions.

Claim is made by the company that the chassis are constructed of standard units, that have been selected with the view of obtaining all desirable qualities and insuring against every possibility of mechanical deterioration. The design is maintained to be exceedingly simplified, the different units unusually accessible for inspection, adjustment and repair; all contacting surfaces of moving parts are very large to minimize frictional wear, and all contacting moving parts are well provided with lubricants and protected from accumulations of abrasives.

All of the units have been determined with the purpose of having large factors of safety and the assembly is designed to have unusual structural strength. The company maintains that the superiority that is claimed for Transport trucks is justified by the design, which warrants expectancy of exceptional service life, low maintenance cost and minimum operating expense, this applying to fuel and lubricant consumption and to tire endurance.

Construction Units Are Standard Type.

The construction units include Continental engines equipped with Eisemann magnetos and Stromberg carburetors, with Duplex governors; Fuller multiple dry disc clutches, Fuller selective sliding gear transmission gearsets, the clutches and gearsets being assembled with the engines in unit power plants; Arvac uni-



The Plan View of the Transport Two-Ton Truck Chassis, Stripped to Show the Unit Power Plant, the Transmission System and the Clark Internal Gear Axle and Frame.

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versal joints and driving shafts, Clark internal gear driven rear axles, Columbia I section front axles, Detroit pressed steel frame, Detroit springs, Jacox steering gears.

The model 50 chassis has a Continental C-2 engine, which has a cylinder bore of 4⅛ inches and stroke of 5¼ inches, this being rated at 27.25 horsepower by the S. A. E. formula, and which will develop a much higher mark. The engine is a four-cylinder, four-cycle, water cooled, L head type, with the cylinders cast en block, with water jacket cast integral and the head of the water jacket a separate plate secured to the block by a series of cap screws.

The crankcase is cast in two sections, with the upper half carrying the main bearings with front and rear extensions that house the timing gearset and the flywheel, with a heavy vertical transverse web in which is mounted the center main bearing. The lower section is the oil reservoir and the base of the crank chamber. The crankshaft is a three-journal type, that is of a special steel alloy, heat treated, and the camshaft is a three-journal type with the cams integral. The crankshaft shaft is drop forged with the flywheel flange and thrust flanges at either side of the main bearing integral. The camshaft is case hardened and ground to master cams. The pistons are each fitted with three diagonally split compression rings. The connecting rods are drop forged steel I sections. The main and the crankpin bearings are nickel babbitt in bronze cages, these being adjustable with shims. The camshaft bearings are bronze and the wristpin bushings of the conecting rods are phosphor bronze. The wristpins are seated in the piston bosses and are retained by locked set screws.

Engine Cooling and Lubrication.

The engine is cooled by a circulation of water forced through the cylinder water jacket by a centrifugal pump driven by an outside shaft from the timing gearset and through a large radiator having a Spirex cooling section and cast top and bottom tanks. The radiator is mounted on the chassis so as to be protected from frame distortion. Radiation is promoted by a fan driven by a flat belt from a pulley on the forward extension of the water pump shaft.

The engine is lubricated by a combination force feed and splash system, the oil being drawn through a screened intake in the sump in the reservoir and forced to the main bearings and the timing gearset, and distributed by splash to the cylinder and piston walls, the wristpins, the camshaft, the cams and the valve tappets. This feed is positive and has been proven to be efficient and dependable.

The clutch and transmission gearset are assembled with the engine. The clutch is practically self-compensating for wear and requires but little attention aside from lubricating the clutch collar. The gearset is a selective sliding gear type having four forward speed ratios and reverse that is built with heavy shafts and large gears, the bearings being an annular ball type.

The Power Transmission System.

The main driving shaft is tubular, in two sections, with an Arvac universal joint at the center and either end enclosed in a steel housing, the rear end of the forward section being mounted on a self-aligning angular ball bearing and the rear end is coupled to the pinion shaft of the Clark internal gear driven rear axle. This axle is constructed with an I section dead axle that carries the load and the power is transmitted through a countershaft that is mounted on the forward side of the dead axle, the pinions on the ends of the driving shaft meshing with the internal gears bolted to the wheels that are enclosed by the brake drums and large flanges that carry the shafts for the brakes. The differential gearset is in the central section of the jackshaft housing and runs in a bath of oil. The entire axle is lubricated from this source aside from the jackshaft pinions and the internal gears. The gears and pinions are lubricated by grease that is placed in the housings.

The frame is constructed of pressed steel channel section, the members being deep, with wide webs, and the cross members are well reinforced and gusseted. The frame is suspended on long, semi-elliptic springs that are shackled to heavy hangers at the rear ends. The spring eyes are heavily bushed and the pivot and shackle bolts are hardened and ground. The driving and braking stresses are taken by the springs, the suspension being the Hotchkiss system, no radius rods being used.

The wheelbase of this chassis is 150 inches and the wheels are wood, artillery type, shod with Goodyear tires, 36 by four-inch forward and 36 by six-inch rear. The steering gear is at the left side of the chassis and the control is conventional, there being the usual foot pedals for the clutch and service brake and hand levers for the ignition and fuel control and for the emergency brake and shifting and gear ratios. The service brake is an external contracting type and the emergency brake is internal expanding, operating on and in drums on the rear wheels.

Special Features of the Chassis.

There are several construction features of the chassis that are intended to obtain operating efficiency. One of these is the specially designed intake manifold, which is heated by the exhaust manifold so that the incoming mixture is preheated and vaporized to be thoroughly combustible. Claim is made that this has been proven in road tests to give approximately two miles more to the gallon of fuel as well as insuring against fouling of spark plugs, excessive deposits of carbon, dilution of the lubricating oil and overheating.

The cooling system is 10 per cent. larger in water capacity than standard systems, so that it is always positively efficient, and aside from the engine practically all of the moving contacting parts are lubricated by grease that is forced to the bearings by a grease gun that will develop 500 pounds pressure to force the grease into the parts. All of the old type grease cups and oilers have been discarded and provision made for quick coupling of the tube of the grease gun. The connections are such that there is no possibility of abrasives or water entering the bearings.

The model 30 chassis is constructed practically to the same design, the engine being a similar type, but having cylinder bore of 3¾ inches and stroke of 5¼ inches, with a rating of 22.50 horsepower by the S. A. E. formula. This engine is cooled by a thermo-syphon circulation of water, and the transmission gearset has three forward speed ratios instead of four.

The engines are governed to 20 miles an hour for the model 20, 18 miles an hour for the model 30 and 15 miles an hour for the model 50, but when these chassis are equipped with pneumatic tires the speeds are higher. The speed is regulated by a governing unit attached to the drive shaft, but for low speed work the other unit of the governor controls the engine.

The chassis are sold with standard equipment, which include motometers and odometers, and pneumatic tires are optional on all sizes.

GENERAL MOTORS EXECUTIVES ENJOY SAIL.

A group of executives identified with various interests of the General Motors Corporation sailed Thursday of this week on the steamship France for an intimate view of conditions abroad as they are at present. The party consists of J. Emory Haskell, Alfred P. Sloane, Jr., S. C. Mott, Walter P. Chrysler and Albert Champion, and it is now made known that C. F. Kettering, president of the Dayton Electric Laboratories Co., is also of the party. The trip is considered by some as a chance to obtain first hand information of conditions abroad. The party will remain abroad about 60 days.

KISSEL CO. INCREASING BODY SHOP FACILITIES.

The Kissel Motor Car Co., Hartford, Wis., is equipping its body shop, used for several years as a storehouse, with new machinery for wood and metal work. A force of 175 to 200 body workers will be employed. The body shop, built four years ago, has long been overcrowded.

GORDON IS DODGE FOREIGN REPRESENTATIVE.

Dodge Brothers, Detroit, Mich., has named John H. Gordon, who was Atlanta, Ga., district representative for the company, as European representative. He will have his headquarters in London and will handle the Dodge export business in England and the continent.

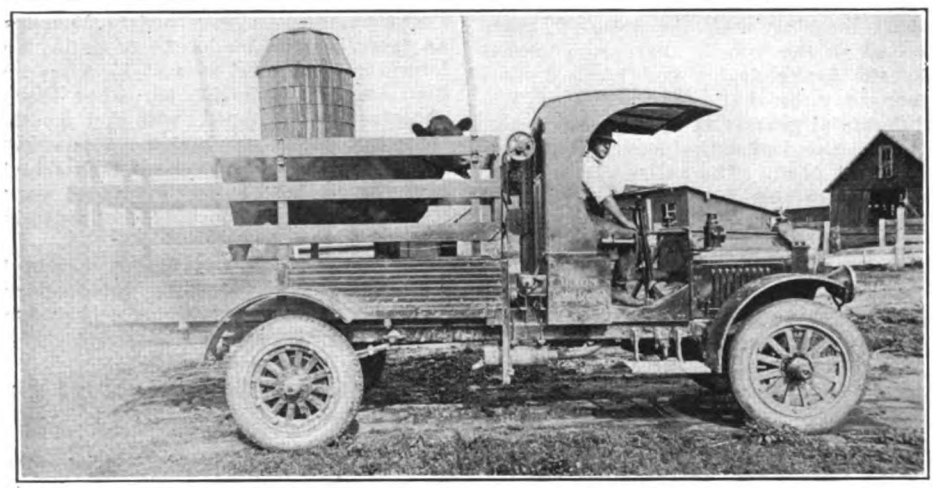
HEIL CO. BUILDING DUMP BODIES.

The Heil Co., Milwaukee, Wis., is now specializing in the production of dump bodies of all kinds, with hydraulic hoisting equipment, for application to motor trucks.

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DEMONSTRATING TRUCK HAULAGE TO FARMERS OF SIX NORTHWEST STATES

Chicago, Aug. 4.—What will be the longest, and there is reason to believe, the most productive truck sales campaign ever inaugurated, was begun today when the caravan organized by the National Motor Truck Development Tour, under the auspices of the National Association of Motor Truck Managers, left this city for a journey through the Northwest. The tour will continue 62 days and after traversing Illinois, Iowa, South Dakota, North Dakota, Minnesota and Wisconsin, will end at Milwaukee, Oct. 2.



(C) Atlas Educational Film Co., Chicago, Ill.

Hauling a Prize Winning Cow Back to the Farm from the North Iowa Fair in a Selden Special Truck Equipped with a Five-in-One Body. One of the Incidents of the Demonstrating Tour of the Northwest.

The purpose of the tour is to demonstrate the utility of power trucks to farmers. The greater part of all truck sales have been to business men in cities, and the belief of the truck sales managers is that if farmers understood the possibilities with truck equipment an enormous potential market would be vastly stimulated.

The start was made from Great Park and the caravan was made up of 14 trucks, and there will be one more added either at Cedar Rapids or Mason City, Ia. The machines that started are as follows:

Name	Capacity. Lds.	Body Type
Atlas	1500	Parry convertible
Atterbury	4000	Rack side
Bethlehem	3000	Wire screen express
Clydesdale	3000	Eight-in-One farm
Diamond T	3000	Farm special
Gramm-Bernstein	4000	Five-in-One, hand hoist
Master	3000	Semi-stake
Maxwell	3000	Stake
Republic	5000	Special farm
Service	3000	Special farm
Selden	3000	Five-in-One farm
Signal	2000	Six-in-One farm
Sterling	5000	Flareboard express
Winther	3000	Express

A Hawkeye truck will meet the caravan either at Cedar Rapids or Mason City. Besides the above there is a 5000-pound Sterling truck affording Goodyear tire service; a 3000-pound Master truck affording Firestone tire service, and a Diamond T 3000-pound truck affording Standard Oil gasoline service.

Cars Carried the Officials.

Accompanying the caravan is a special courier riding in a Harley-Davidson motorcycle sidecar, a Packard car provided by the Goodyear Tire and Rubber Co., carrying Tourmaster M. D. Scott, an expert on truck transportation; Tour Director A. R. Kroh and other officials, and a Cadillac car furnished by the Firestone Tire and Rubber Co.

Preceding the caravan three weeks are Donald M. Wright, representing the Goodyear company, and George R. Kiley, representing the Firestone company, who are making the arrangements for the meeting and providing the publicity desirable, and two days ahead of the tour is Carl Stubig, who has a Maxwell car, provided by the Maxwell Motor Sales Corporation, Detroit. The director general of the tour is W. F. Sturm. Accompanying the caravan is a band of United States Navy bluejackets in command of Lieut. Willson. This band is to furnish music for the meetings and at different events in connection with the tour. One of the trucks carries an Alamo lighting outfit, which will illuminate the caravan when parked for the night and will provide power for a moving picture machine.

The Atlas Educational Film Co. has an outfit and representatives with the train and the object is to make pictures that will later on be available for educational meetings which will be held throughout the country and show the actual events of the tour. There is promise that a very large number of other photos will be made. The film, as completed, will be used during the meetings en route.

All of the trucks have pneumatic tire equipment and one purpose of the tour will be to prove that such tires are more serviceable and economical for country haulage than are solid tires.

The original itinerary for the tour has 72 stops, and during each stop there will be a meeting and a show of the trucks. The stops will vary in length from one hour to two and a half days. Wherever possible the caravan will participate in local demonstrations and there is probability there will be some variance from what was originally planned to better serve conditions that may develop.

A gathering that numbered several thousand witnessed the mobilization of the trucks and the departure, and headed by an escort of motorcycle police the start was made at 11:15, the objective point being Elgin, Ill.

First Night at Elgin.

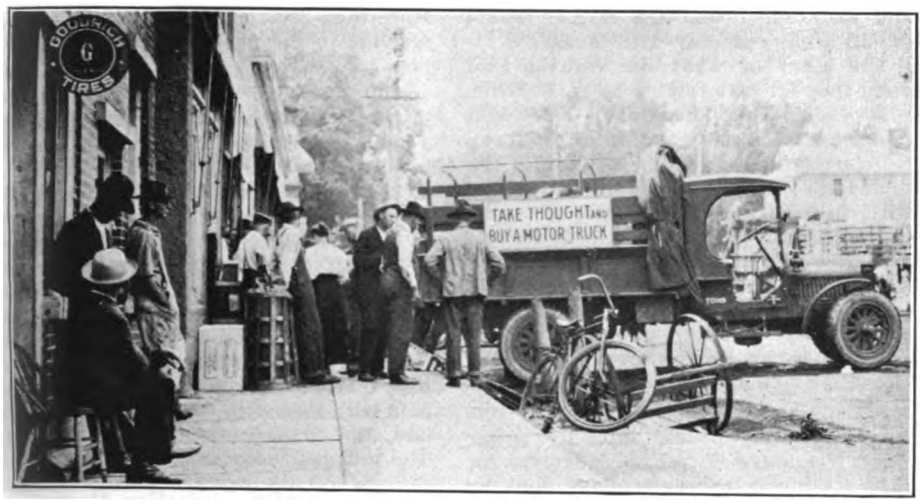
Elgin, Ill., Aug. 4—The drive to this



(C) Atlas Educational Film Co., Chicago, Ill.

Drawing Oats from the Field to the Thresher with a Republic 2½-Ton Truck. An Example of the Manner of Educating Farmers with the National Truck Demonstrating Tour.

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(C) Atlas Educational Film Co., Chicago, Ill.

Unloading a Cargo of Freight from a Diamond T 1½-Ton Truck at a Retailer's Store, This Haulage Being Done to Show the Wholesale Grocer the Practicality of Truck Transportation.

city from Chicago was made without incident other than to attract much attention in the different villages. The caravan was accompanied the entire distance by the Chicago motorcycle police squad. On arrival the trucks were parked in the business district and some demonstration hauling was done by the Signal and Diamond T trucks. The sales representatives and drivers had a special meeting tonight to arrive at definite understanding relative to demonstrations, etc. The distance covered today between start and finish was approximately 40 miles.

Two Shows and Meetings.

Freeport, Ill., Aug. 5—The start from Elgin today was made at 7:10 in a heavy rain and the drive was first to Belvidere, where, despite the weather, a company of about 1500 people, many of whom were farmers and dairymen, listened to a lecture by A. R. Kroh, after which those who desired examined the trucks. The band gave a concert and there was a meeting of truck dealers of Belvidere and the surrounding towns that was presided over by Mr. Kroh.

Leaving Belvidere the train started for Rockford, which is 48 miles from Elgin, and on arrival made a short street parade and then the touring party had lunch at the Rotary room of the Nelson Hotel. Judson Joslyn and Murray Bird, Nash and Packard distributors in this city, were active in welcoming the train and urged upon the tourmaster the desirability of having a special demonstration at Rockford later in the year, believing that it would greatly promote truck sales. Messrs. Joslyn and Bird piloted the caravan the 27 miles from Rockford to this city. Though the roads were muddy the train arrived at 5:45, the mileage for the day being 75. This evening the band gave a concert and Mr. Kroh addressed a company of about 1000 from the courthouse steps. After the meeting many interested people talked trucks and transportation until there was seemingly prospect of an all-night session.

First Field Work Demonstration.

Dubuque, Ia., Aug. 6—The start was made from Freeport at 7:30 this morning and when about three miles from the town of Lena from 15 to 20 farmers flagged the train about 9 o'clock and wanted to "have a look." Then the Selden, Atterbury, Republic and Service trucks were taken into fields and hauled sheaf oats to threshing machines, the farmers watching the work very carefully, and the moving picture operator doing a man's work. This work was done on H. C. Doll's farm. During the demonstration the band gave a concert that attracted the families of a number of farmers. Before the caravan moved the farmers exacted a promise that the films should be brought back to their town.

The first show was to be at Galena, but the train was met by a delegation from Hazel Green, Wis., where a demonstration to welcome returning soldiers was in progress with the request that the tour cancel Galena and visit that town. The Galena committee acquiesced, since there was a big representation from Galena at the town, and there was no reason to question the wisdom of the change. The meeting at Hazel Green was large and a goodly number of the gathering were farmers.

The caravan left for Dubuque, the roads being very muddy, and one truck tried chains as an experiment, but there was general opinion the chains were no material benefit. At Dubuque, with a mileage for the day of 90, the trucks were parked about the court house. There was an early gathering of city folk and then the farmers came. There was a well attended meeting that developed into discussion as to the relative qualities of solid and pneumatic tires, that originated from the use of solid tires by the Intercity Haulage Co. on the roads the caravan had passed over. There was seemingly agreement that the pneumatic tires afforded the better traction on a poor road.

Statement was made by H. A. Kessner, cashier of the First National Bank, that the banks of the city would be glad to cooperate with substantial truck dealers to finance truck sales. He was insistent that the pictures taken during the tour be shown in Dubuque during the winter, and he promised a large audience. He suggested that an all-day conference of bankers and farmers with reference to financing truck sales be held.

Waterloo's 20,000 Greet the Tourists.

Waterloo, Ia., Aug. 7—Today the mileage is 92 between start and stop, and considerably more as driven. The first stop after leaving Dubuque was at Manchester, where the train was met by the Mayor and a local committee, and the trucks were taken to the fair grounds and driven on the race track to demonstrate them. More than 2000 persons listened to an address from the grandstand and after the speaker had answered all kinds of questions the farmers examined the trucks close up and got more information. M. H. Shoop, a farmer owning a ton truck, is now making three round trips from town, a distance of 14 miles a trip, hauling tile, against



(C) Atlas Educational Film Co., Chicago, Ill.

Taking on a Cargo of Miscellaneous Freight at Mason City for Distribution Along the Route of the National Truck Demonstrating Tour.

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but one trip with a two-horse team.

Mayor Purdy and a committee met the train at Independence, which was reached at 1:30, the roads being good aside from a three-mile detour, and 5000 persons listened to an address. While the farmers were looking over the trucks the tour officials interviewed the officials of three banks, and found two of them interested in financing local truck sales.

Leaving Independence at 3:30 this city was entered, train being met by Mayor R. C. Thomas, B. B. Hunter, chairman of the local committee, and the committee. The streets were thronged and estimate was made that 20,000 persons were in the vicinity to listen to talks made in the evening by A. R. Kroh, Lieut. Willson of the Naval Band, Mayor Thomas and B. B. Hunter. This was preceded by a parade of trucks through the city. The Kimball Publishing Co. and the automobile dealers of Waterloo gave a banquet to the entire truck personnel at the Russell-Lamson House. The Naval Band was quartered at the Y. M. C. A. and the tourists at the hotels.

From Waterloo to Vinton.

Vinton, Ia., Aug. 8—Leaving Waterloo this morning with the trucks filled with citizens and farmers a caravan was driven around Orange township, starting at 7:30. Many stops were made during the drive for inspection of the trucks. Return was made to Waterloo for lunch and then the train went to LaPorte City, accompanied by E. L. Esher of the local committee. At LaPorte City there was an hour's show and the train was joined by the Vinton local committee, headed by George M. Erics, secretary of the Commercial Club. The tour departed for Vinton and on arrival there made a parade, after which the trucks were parked in the business section and dinner was partaken of. Then came a band concert and a talk to a very large number of citizens and farmers. A conference with regard to financing truck sales was held with G. D. McElroy, cashier of the Farmers' National Bank; A. Beline of the People's Savings Bank; M. J. Collins of the Vinton Savings Bank and W. S. Goodhue of the Vinton State Bank.

First Sunday at Cedar Rapids.

Cedar Rapids, Ia., Aug. 9—Piloted by Owen Berry of the Truck Service Co., Winther and Federal agent at Cedar Rapids, start was made at 6:30, the trucks picking up two loads of oats and one load of milk for delivery at Cedar Rapids. The train was met by the chief of police of the city and the local committee, and on arrival the trucks were parked in front of the municipal building and police headquarters, and the streets were roped, for the trucks will remain here until Monday morning. The day's mileage was 30. During the day and evening the trucks were seen by thousands, many of them farmers.

At 1 o'clock there was a banquet at the Montrose Hotel given to 25 members of the train personnel, the truck dealers of the city and members of the Chamber of Commerce and city officials. Lieut. Gov. Moore was toastmaster and praised the National Association of Motor Truck Sales Managers for promoting the tour and maintained that the farmer would obtain great economy with trucks.

The story of what the caravan had done thus far was related by A. R. Kroh, who predicted the advantages that would result from the motorization of the farm.

Plans were made today to transfer the tour impedimenta to as few trucks as will carry it so that the empty trucks can be loaded with from 15 to 20 tons of groceries and other freight from Cedar Rapids wholesale concerns consigned to towns along the route of the caravan, each concern making a shipment to have a man accompany the truck doing the freighting to make notes.

Statement has been made that a company that has opposed intercity power truck freightage is to base judgment for future shipping on the haulage done by the trucks of the caravan, this being due to the pneumatic tire equipment of the trucks. The company will make a 10-ton shipment, and for this reason there is unusual interest in the trial that will be undertaken. Included in the firms that will make shipment are Lagomarcino-Grupe Co., Warfield-Pratt-Howell Co., John Blaul's Sons, Western Grocery Co. and J. G. Cherry Co.

The principal feature of Sunday was a concert by the Naval Band and a dinner given to Official Lecturer Kroh by Luther Brewer, editor of the Cedar Rapids Republican, at which Lieut. Gov. Moore was also a guest. Lieut. Gov. Moore is a banker and enthusiastic in advocacy of power truck transportation, especially for farming operations.

Mr. Brewer has a broad fund of agricultural information and has for years been a keen observer of farming development, especially in Iowa. He is to make an address at the November meeting at Detroit of the National Association of Motor Truck Sales Managers. He has given large publicity to the demonstration, devoting one page of his paper to the plan a week ago, before the start from Chicago, and today there was another similar feature, this, however, dealing with the tour and its results.

Delivering Freight Along the Route.

Marshalltown, Ia., Aug. 11—The trucks carried about 20 tons of freight when they left Cedar Rapids this morning, this being the first actual demonstration of long distance haulage. Thomas Guerin, a member of the Iowa Highways Commission, accompanied the caravan to get first hand information of the work of the trucks. Leaving the Lincoln Highway the train passed through Norway, Watkins, Blairstown, Luzerne and Fairfax, making deliveries of shipments from Cedar Rapids, each of the wholesale houses having representatives with the loads.

Before reaching Belle Plain the caravan was met by a reception committee from the town and escorted to the center, where more deliveries were made, the band gave a concert and there was an hour's show of the trucks that attracted a large company. The next stop was Chelsea, where more freight was discharged, and then Tama was reached, where a lunch was served by ladies representing the Civic Improvement Club. More than 2000 people were present at a meeting in the public square.

The last stage into this city was over excellent roads. The trucks were parked in front of the court house and following a band concert at Riverside Park a meeting of truck dealers and sales representatives was held at the Commercial Club. At this meeting a statement was made by a Marshalltown truck dealer that in the event of rain the train could not drive from Grinnell to Des Moines. This led to discussion of the qualities of pneumatic tires as compared with solid tires on muddy roads. The salesmen believed that this was the best meeting thus far held with reference to getting the dealers and the manufacturers into harmony. The mileage today was 77.

Through Rain Into Des Moines.

Des Moines, Ia., Aug. 12—After leaving Marshalltown this morning the drive was without incident to Grinnell, which was reached ahead of the time schedule. At Grinnell there was a band concert and a short meeting. Lunch was eaten at the Monroe Hotel, and during this there was a thunder storm that saturated the roads. This was opportunity for demonstrating tire qualities.

Within a mile from the city a long, slippery hill was descended, and the Winther truck towed a passenger car up the grade, which could not be made by the car under its own power. The trucks made good time, however, and there was a considerable number of people to watch the climb. Between Grinnell and Newton the trucks towed to the roadway 13 different passenger cars that were mired in ditches, and when the cars were out of the ditches the trucks were driven through the ditches to pass them.

About halfway to Newton the train stopped to haul a solid tire truck out of a ditch. The truck had a 25 per cent. overload and the driver and helper had worked for hours to extricate it. With a tow rope the truck was hauled on to the road and the caravan drove around it and kept on. The hills were often steep and slippery, and the conditions became worse as this city was neared. There was no grade too bad for the trucks to climb and drive ended without accident or incident.

Here a committee welcomed the tour, and in the evening there was a banquet at the Fort Des Moines Hotel, at which Gov. Harding, the local committee of arrangements, the truck dealers of the city and the entire personnel of the train, aside from the Naval Band, were present. The principal event was a talk by Gov. Harding on the general subject of preparedness, and he was so much interested in the talks on the use of trucks on farms that he remained with the company until after midnight. Among the other speakers were J. E. Tracy, president of the National Association of Motor Truck Sales Managers; F. W. Fenn, secretary of the Motor Truck Committee of the National Automobile Chamber of Commerce, and A. R. Kroh. The dinner was attended by about 300 persons, a number of whom were truck dealers from other cities.

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Features of the Stay in Des Moines.

Ames, Ia., Aug. 13—The drive today was comparatively short, but the day as a whole was very interesting. Breakfast was served at the Commercial Club, the touring personnel being the guests of Successful Farming, Wallace's Farmer and the Pierce farm publications. Then came a tour of the different printing plants of the prints named, and then there was a tour of the city by the caravan, which led about 50 trucks owned by local dealers, the Naval Band playing over the route. Moving pictures were made during the parade. At noon lunch was served at the Commercial Club, the tourists being the guests of the local committee of arrangements and the Chamber of Commerce. Of the 300 present, about 30 were truck dealers from other cities and towns, who were not at the dinner the evening previous. After the lunch talks were made by President Tracy of the National Association of Motor Truck Sales Managers, Sales Manager A. L. Whipple of the Diamond T Motor Truck Co., A. E. Schafer of the Gramm-Bernstein Motor Truck Co., Max Korshin of the Selden Truck Sales Co., and A. R. Kroh.

Before the meeting was ended the dealers in attendance agreed to have a truck demonstrating tour of Iowa, which will leave Des Moines, Oct. 13, with an itinerary of at least a week. An invitation was tendered to Mr. Kroh to join this tour and he promised to do so. He suggested that the trucks now participating in this tour be driven back from Milwaukee, where the tour will end, to participate in the Iowa tour.

During the stay in Des Moines Successful Farming invited the entire personnel of the tour to be its guests at Clear Lake from Saturday to Monday, which invitation was accepted. Wallace's Farmer invited the tourists to be its guests at Lake Okobeje the night the tour was to stop at Spencer, which was accepted conditionally.

The roads from Des Moines to this town were muddy and because of construction work the trucks had to make detours into soft fields, in several instances through mud so deep the differential housings of the rear axles dragged. During the drive eight mired passenger cars were hauled out of ditches. The local committee met the tour outside of the town and there was a parade through the streets. In the evening there was a farmers' meeting at the city hall that was well attended. The day's mileage was 32.

Demonstrating in the Fields.

Iowa Falls, Ia., Aug. 14—A good part of today was given over to demonstrating field work. The trucks were engaged during the morning in hauling produce and crops of different kinds from farms into this city, and the Republic, Atterbury, Maxwell, Sterling, Hawkeye, Clydesdale and Winther trucks were driven to the farm of Frank Gilbert, where they hauled oats from fields to a thresher, and the grain from the thresher to the storehouse until 8 o'clock in the evening.

The truck drivers were unable to have the farmers compete directly with the machines with animal teams, but the farmers were agreed that four trucks would serve any threshing machine, that fewer men were necessary, and the same work could be done as with nine two-horse teams. The crews of the trucks were urged to remain for supper, but only those of the Republic and Winther trucks, which finished work last, accepted. According to the crews, the supper was an event to be remembered.

Tourists Run Into a State Fair.

Macon City, Ia., Aug. 15—This morning a courier came from Hampton to Iowa Falls to meet the caravan and escort it to Hampton. In the yard of the court house at Hampton there was a special bandstand, where the Naval Band gave a concert. The tourists were served with lunch at the Northwestern Hotel, the menu being admirably prepared and served. The entertainment of the train was extremely hospitable and there was decided interest in the trucks.

In Hampton the caravan was met by the local committee from Mason City and the drive to the latter city was quickly made, the day's mileage being 47. Directly after arrival the trucks were driven to the grounds where the Iowa state fair was in progress and attracted much attention, while the concert of the band was decidedly interesting. Here the train was joined by W. D. Rightmire, sales director of the Winther Motor Truck Co., and E. T. Herbig, sales manager for the Service Motor Truck Co.

Hauled Cattle from Fair to Farm.

Mason City, Ia., Aug. 16—Today was partly devoted to demonstrating. Under the direction of L. H. Boydsden of the Service Motor Truck Co., who is assisting Mr. Kroh, some of the trucks were laden with cattle and live stock at the fair grounds and the animals were hauled to the farms of the exhibitors. The trucks were displayed at the fair grounds and about the city and were the objects of much interest by the people. This evening there was to be a meeting at the Commercial Club and while there was more than 100 acceptances, but a few appeared, evidently believing the meeting was to be abandoned.

The trucks left for Clear Lake late in the afternoon, where the tourists will be the guests of Successful Farming until Monday morning. The sales representatives dined at Clear Lake and drove back to the meeting to be disappointed.

Week End at Clear Lake.

Clear Lake, Ia., Aug. 17—The entire caravan will remain here until tomorrow as the guest of Successful Farming, which has a private hotel and a hall, where the men are quartered. Meals, lodgings and amusements of different kinds were provided by the publication, and a crew of four cooks from the Successful Farming cafeteria at Des Moines provided food that was delightfully appetizing. Tomorrow the third week will be begun with a drive from Mason City to Algona and Spencer.

WISCONSIN PARTS MAKES ORGANIZATION FINAL.

Disclosing a volume of business doubled in the three months that have elapsed since the old E. B. Hayes Machinery Corporation, Oshkosh, Wis., passed into the hands of the newly formed Wisconsin Parts Co., the latter company recently completed its formal organization. It is now considering plans for enlarging the plant in which it makes its Wisconsin worm drive axle. W. F. Rockwell, leading spirit of the formation of the new company in May, is president. Louis Schriber, vice president of the Old National Bank of Oshkosh and a director of the First National Bank of Milwaukee, is treasurer. In addition, E. J. Dempsey, of the law firm of Bouck, Hilton, Kluwin & Dempsey, has been elected secretary. These three men, together with E. M. Morris, general manager of the R. McMillan Co., and Harry Wall of the Wall-Spaulding Lumber Co., form the new board of directors.

Other officers elected at the recent meeting include J. F. Hayes, formerly president of the E. B. Hayes Machinery Corporation. as vice president; A. H. Chatley, assistant treasurer, and E. H. Rhyner, assistant secretary. Robert L. Murphy has been appointed purchasing agent for the company.

BEACH JOINS FERRO MACHINE AND FOUNDRY CO.

Edward W. Beach, formerly vice president and works manager of the Manufacturers' Foundry Co., Waterbury, Conn., has joined the executive staff of the Ferro Machine and Foundry Co., Cleveland, O. Beach is widely known in the trade, not only by reason of his direct business relations, but also through his activity in the work of the Motor and Accessories Manufacturers' Association, of which he is a director. He is an expert on foundry work, in which he has spent the greater part of his life, particularly in work on intricate castings, and is known as a producer. Beach goes into the Ferro organization with the normal title of assistant to Chrispin Oglebay, president.

NEW VICE PRESIDENT FOR PACKARD CO.

H. H. Hills, for more than 10 years occupying high places in sales and administrative work for the Packard Motor Car Co., Detroit, has been made vice president in charge of distribution. George R. Bury, who as Hills, had been assistant general manager, is brought back to the factory from the presidency of the Chicago Packard Co. to become general distribution manager. In this position Mr. Bury succeeds C. R. Norton, who recently resigned that post after more than 10 years spent with the Packard company.

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NEW WEIDELY HEAVY DUTY ENGINE

COMMERCIAL production of an engine designed especially for truck and tractor propulsion has been begun by the Weidely Motors Co., Indianapolis, Ind., according to George A. Weidely, vice president and chief engineer of the company. The engine is designed for heavy duty and is known as model MA. It is the development of a design that has been built in increasing numbers for tractor manufacturers for the past three years.

It is a four-cylinder, four-cycle, water cooled, vertical, I-head type, having cylinder bore of 3¾ inches and stroke of 5½ inches, and is rated at 22.50 horsepower by the S. A. E. formula, but tests made on the electric dynamometer show a brake horsepower production of 40 at 1800 revolutions, which is very large for a unit of the stated dimensions.

The engine is designed for combination with either clutch or clutch and transmission gearset and it has the standard S. A. E. No. 3 bell housing to enclose the flywheel. The flywheels can be furnished for all standard S. A. E. clutch mountings. The unit is built for mounting at three points—at the forward end on a trunnion support and at the rear on arms cast integral with the crankcase.

Constructed to S. A. E. Dimensions.

As the engine is designed it can be equipped with magneto or ignition, lighting and starting systems that are constructed to what are regarded as standard dimensions of the S. A. E. Much attention has been directed to security of assembly and all bolts, studs and nuts are S. A. E. standards and are locked with lock washers or cotter pins, and wherever necessary, as on the studs that retain the cylinder head to the engine block, special nuts are used, and where the studs are screwed into the metal the threads are usually 1½ diameters or more length.

The cylinders are cast with the water jacket and the upper half of the crankcase integral, and as the head is cast separate this insures that the water chambers are cleared and the circulation is positive, and that the walls are uniform thickness, which makes for efficiency of cooling and lubrication. The block construction affords the maximum strength and rigidity and the alignment and relation of the cylinders to each other. Each cylinder is uniformly cooled.

Care to Obtain Efficient Cooling.

After the engine blocks have been cleaned and machined the cylinders are bored and reamed, and after being subjected to an annealing process for several weeks are ground to dimensions. The heads carry the valves and include the intake and exhaust ports, the valve seats and the spark plug bosses, all of which are surrounded with ample water chambers. The heads are secured to the cylinder blocks by 10 large nickel steel studs.

The pistons are cast with cross ribs above the wristpin bosses to reinforce the domes of the units. The pistons are fitted with three ring grooves and oil grooves and drainage holes to equalize lubrication. The wristpins are floated in the pistons and the connecting rods and are retained by snap rings in each end of the piston boss bores. Statement is made that this construction insures larger wristpin bearing surface than is obtained in other type pistons and that the pistons may expand and contract without distortion. The wristpins are alloy steel tube, hardened and ground to dimensions.

Lubrication System Protection.

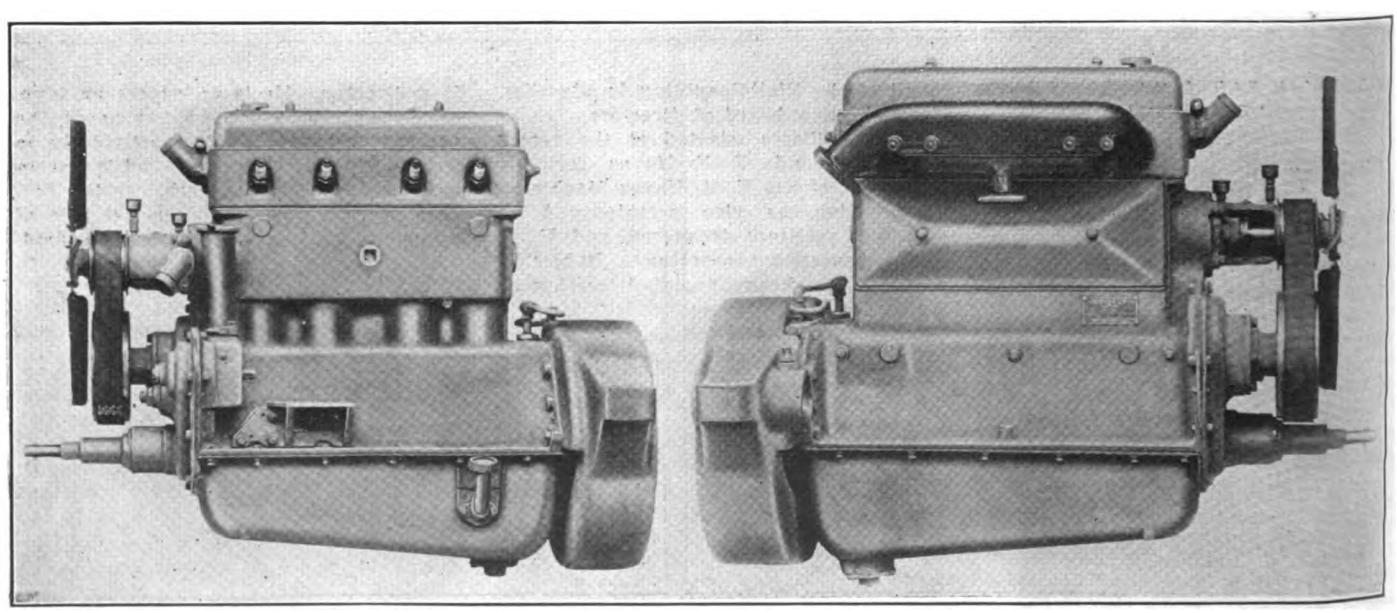
The lower half of the crankcase is a casting that increases in depth from front to rear, and at the rear at the right side is the screened intake for the oil pump, which is so mounted that it may be removed with the large drainage plug for cleaning or flushing. The webs that carry the main bearings are heavy and the upper section of the crankcase is extended forward to house, with a cover, the timing gearset. All internal parts of the engine are sand blasted to remove scale and foreign matter that might find its way into the lubricating oil.

The crankshaft is drop forged from a high grade alloy steel with the flywheel flange, and flanges at either side of the journals to take end thrust integral. The shaft is 2⅛ inches diameter and the front and center journals are 2½ inches length and the rear journal four inches length, a total of nine inches. The crankpins are two inches diameter and 2¼ inches length. The shaft is machined, heat treated and ground to dimensions. The shafts are drilled to afford pressure lubrication of the journals and crankpins and at the forward end of the shaft is a large adjusting nut to take up end play if this should develop.

The Reciprocating Members.

The camshaft is drop forged from special steel and the flange for securing the timing gear and the cams are integral with the forging. The shaft is carefully machined, case hardened and ground to master cams. It is mounted in bearings larger than the shaft so that it may be removed as desired with minimum labor. The connecting rods are alloy steel drop forgings and are fishback section, the claim being made that the company has found this type insures better forgings and more rigid rods with less liability to cracks and "cold shots" during forging. These rods are heat treated.

The main and connecting rods are mounted in No. 24 S. A. E. babbitt bearings that are carried in heavy bronze cases, and they are fitted to oil grooves to insure equalized lubrication. They are fitted with laminated brass shims and the caps are each retained by four nickel steel bolts. The camshaft bearings and



New Weidely Heavy Duty Truck Engine: At Left, Left Side, Showing Cylinder Water Jacket Inlet on Forward End of Block; at Right, Valve Side, the Unit Exhaust Intake Manifold and the Combined Drive of the Farm and Water Pump by a Belt Being a New Feature of Engine Design.

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the bushings of the wristpin ends of the connecting rods are phosphor bronze and these are of large dimensions. The timing gears are large diameter and have extremely wide faces that are helically cut so that they are noiseless in operation.

The valve tappets are a mushroom type, tubular, of extremely large size and have much larger bearing surfaces than the conventional designs, which means much longer service life. The push rods are fitted in long guides and the rods and tappets are enclosed by a large removable steel plate with an oil tight felt gasket.

The inlet and exhaust manifold are cast integral and are so designed that the heat of the exhaust gasses sufficiently increase the temperature of the fuel that it is vaporized and claim is made that this insures operating efficiency, fuel economy and prevents the dilution of the lubricating oil in the crankcase. The manifold is seated on copper-asbestos gaskets and secured to the cylinder block head by heavy studs.

Water Circulation Insured.

The engine varies from conventional practise in the water circulation, which is forced by a centrifugal pump that is mounted with the fan on a large diameter hardened and ground shaft. The impeller of the pump projects into the front of the cylinder jacket and circulates the water around the base of the cylinder jacket and then upward through the water ports and over the combustion chambers and around the valves and the spark plug bosses. The location of the water ports is with the object of having the flow uniform through the cylinder block. The fan is mounted on the forward of the pump shaft and the shaft is supported by an extension of the pump body casting in which is a large Hyatt roller bearing. The stuffing box is very large and is packed with a metallic packing.

The engine is lubricated by a pump at the rear end of the crankcase that is direct driven by the camshaft. The oil is drawn from a screened intake in the reservoir and forced through a tubular header to the three main bearings, through the drilled channels in the crankshaft to the crankpin bearings, and through ducts drilled in the crankcase wens to the camshaft bearings. There is a relief valve in the main header that floods the timing gearset, so that the gears and bearings are sufficiently lubricated. The oil thrown off by the centrifugal movement of the crankshaft is distributed to the cylinder and piston walls, the wristpins and bearings, the cams and valve tappets. The level of the oil in the reservoir is indicated by a float gauge dial at the side of the crankcase.

Under the cover of the timing gearset and mounted on the forward end of the magneto shaft is the fly ball type governor, which is connected to a bell crank through a cross shaft. Pivoted on this bell crank is an adjustable governor spring, adjustable from the outside and so constructed that it may be locked. Through a connecting link the bell crank is connected with a separate butterfly located between the intake manifold and the carburetor. The entire governor mechanism is enclosed and after it has been set and the adjustment on the spring sealed, no charge can be made without breaking the seal.

The engine is now being produced commercially and there is probability that it will be built in considerable numbers.

SHIPMENTS OF POWER VEHICLES FOR JUNE.

During the meeting of the directors of the National Chamber of Commerce at Buffalo, July 16, Traffic Manager J. S. Marvin for the traffic committee made report that 23,580 carloads of vehicles had been shipped during June, against 15,869 shipped during June, 1918.

Members of the chamber have been notified by the traffic department of the necessity of protecting claims against carriers by filing suit within two years and one day after delivery of shipments. Some claims are not settled quickly and some railroad attorneys have advised that the carrier is not legally liable after the time specified because of a clause in bills of lading requiring suits to be filed within that time. The members have also been fully advised as to the procedure to be followed in collecting claims against the Adams Express Co. on shipments made prior to July 1, 1918.

Reduction has been made in freight rates on power vehicles in carloads from eastern points to Pacific coast ports for export which became effective July 10. Passenger cars will have a rating of $3.25 a 100 pounds against a prior rate of $3.87½ and freight vehicles a rating of $2.75 a 100 pounds against a prior rate of $3.25. A rating of 15 per cent. below second class on power trucks complete, knocked down, in boxes or crates, in carloads in eastern territory, has been obtained. The rating was previously second class.

NEW ANTIGO FOUR-PLOW TRACTOR.

The Antigo Tractor Co., Antigo, Wis., is about to start quantity production of a tractor. The tractor has a quadruple drive and steering mechanism. Power is applied close to the periphery of each of the four drive wheels and no universal joints are used. It is a four-plow type, powered with a 32 horsepower gas-kerosene engine, and steers on all four or both front wheels. The designer, D. S. Stewart, is one of the pioneers in the tractor industry of Wisconsin.

EARL L. VOSLER NEW FRUEHAUF SALES MANAGER.

Earl L. Vosler, who was for two years associated with the Fruehauf Trailer Co., Detroit, as sales manager, has been elected secretary of the company by the board of directors and will discharge the duties of that office as well as directing distribution of products of the works.

The company is making ready to erect the new plant, which will largely increase the production, and the addition to capital, which is now $250,000, will greatly amplify the company's resources. The location of the new works is such that receiving material and shipping will be greatly facilitated.



Earl L. Vosler, Secretary and Sales Manager, Fruehauf Trailer Co.

BOOKLET OF CLARK WHEELS FOR PNEUMATIC TIRES.

A booklet descriptive of the new Clark wheel for pneumatic truck tires has just been published by the Clark Equipment Co., Buchanan, Mich., manufacturer of disc steel wheels and internal gear drive axles for trucks. The booklet is admirably illustrated and is replete with tire data, which includes size detail, tabulation of weights on both front and rear wheels of trucks of different capacities with the cord tire size for each truck, a table of maximum loads and the corresponding inflation pressures for pneumatic cord tires. A chart showing the actual test made to determine the strength of the electric furnace steel of which Clark wheels are made is included. The booklet will be sent free by application to the company.

ZENITH CARBURETOR CO. INCREASES CAPITAL.

The Zenith Carburetor Co., Detroit, Mich., has increased its capitalization from $40,000 to $320,000. Of this $180,000 has been issued, all being taken by the present stockholders. The balance will remain unissued. The new money will be used to purchase real estate and buildings, formerly owned by the French corporation of Zenith company, as well as other assets formerly owned by them.

GOODYEAR BUYS FALL RIVER YARN PLANT.

The Connecticut Mills Co., a subsidiary of the Goodyear Tire and Rubber Co., has recently purchased the Globe Yarn Co. plant of Fall River, Mass., the last of the yarn plants operated by the New England Cotton Yarn Co. It will be used for the manufacture of cotton yarns for tire fabrics, which will necessitate a change in equipment. The plant operated 54,000 spindles.

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ROLLWAY PUMP A NEW TYPE

A PUMP designed to an entirely new principle, for which unusual qualities and exceptional efficiency is claimed, is now produced by the Michigan Machine Co., Detroit, Mich., which has been given the trade name "Rollway." The pump was developed by two engineers of one of the largest engine plants of the world and statement is made that the incentive for development was the belief that other type pumps were too expensive when compared with the cost of maintaining machine tools and other equipment. Further claim is made that the efficient life of the centrifugal pump is short and cannot be used advantageously on all machines because of limited suction and low pressure, and is not suited to most machines where oil is used. Geared and wing pumps were found to give very short service on water solutions and the necessity of using check valves retarded the flow, while loss of prime, clogging, etc., were experienced daily.

The "Rollway" pump is the result of two years' experiment, some of the objects sought being obviation of loss of prime, clogging, low suction, short life. The pumps have been used for more than a year and have been found to have the expected qualities and other advantages.

The pump consists primarily of two rollers which rotate eccentrically in the pump chamber. The entire action is rolling, which obviates all wear that is caused by frictional contact in other pumps. It will function at slower speeds. It is claimed to be a positive pump in that it is self-priming when used not more than 10 feet above the level of a liquid, and this positive suction is not affected by aeration. The tank from which the liquid is drawn may be emptied and the pump may draw air, but when the tank is refilled it will draw the fluid.

Pump Cannot Be Clogged.

No relief valve or overflow piping are required. The outlet in the discharge piping may be closed and the pump operated without damage to it or the piping. This result is obtained by the use of a spring in a rectangular slot in the inner roller that bears against the squared shaft. This spring operates only when the pressure on the pump is as great as the pressure required to compress the spring. When this pressure is reached the compresion of the spring allows the rollers to come to the center of the pump, where they continue to revolve in the liquid without further pressure on it.

Anything carried into the intake, such as metal chips, paper, rags, waste, etc., will pass through the pump without clogging or damaging it because the action of the pump is to roll the liquid in front of the pump rotor. Should a chip, for instance, stick, the spring described will compress, so that the roller will pass over the obstacle without damaging the pump and it will be washed out at the next revolution of the rotor. The pump may be used upside down or in any position on a machine where installation is most convenient and either side of the pump may be used as intake or outlet. Plain pumps may be used on reversing machines where no liquid is required when the machine is reversed. The pump can be reversed without damage and it will have full delivery when driven. A pump fitted with reverse valves can be supplied where it is necessary to maintain a constant flow in a given direction regardless of the direction of rotation of the pulley.

Speed Not a Factor for Efficiency.

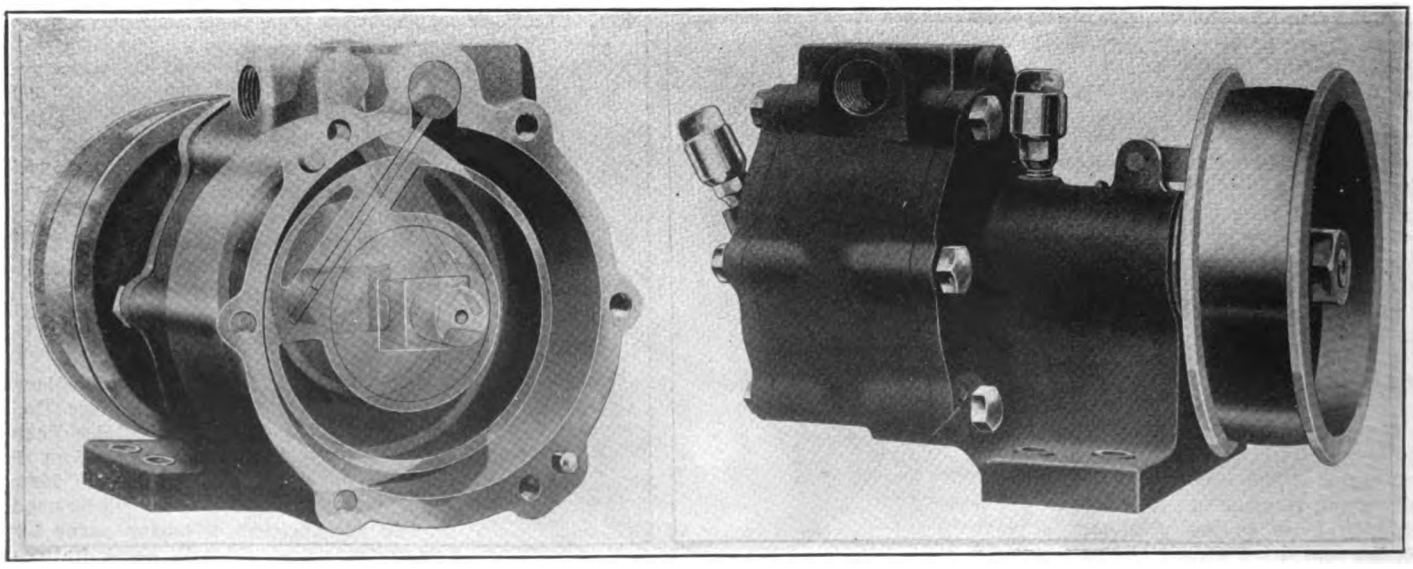
Speed is not a factor in the efficient operation of this pump, for it may be driven from 100 to 600 revolutions a minute or faster, and it is applicable to all types of machines without extra expense for making special provision for either high or low speed to insure maximum efficiency. Long life is claimed because the pump may be operated at low speed. The manufacturer claims that true pump standardization is practical, which minimizes maintenance and makes necessary having but one series of repair parts. The pump can be used for either oil, water or other solution and less power a gallon is required than with any other type of pump.

Statement is made that the following tests were made with a ¾-inch pump that has been pumping a dirty, gritty compound for several months. To both the intake and outlet 50 feet of garden hose was attached, this necessitating greater friction than if piping were used. At a lift of seven feet the pump primed itself almost instantaneously at 160 revolutions a minute. With a suction life of eight feet six inches the pump primed itself almost instantaneously at 360 revolutions a minute. The same results were obtained with a 10-foot lift at 430 revolutions a minute.

No Variability with Varying Height.

The end of the 50-foot suction hose was placed in a barrel of water on an elevator at the third floor and the pump started and the elevator lowered 40 feet and the pump continued to discharge a full stream. The ¾-inch pump with a 36-inch suction discharged 7½ gallons a minute at 160 revolutions, 11 gallons at 360 revolutions, 15 gallons at 500 revolutions and 20 gallons at 650 revolutions. The standard pumps are furnished with a controlling spring to develop 25 pounds pressure at 200 revolutions and a 40-pound pressure at 420 revolutions. The pumps can be supplied with spring to develop either higher or lower pressure or without springs when very high pressure is required.

These pumps are now built in ¾ inch and ½ inch sizes and they will be produced in sizes from ¼ inch to two inches. and later with reverse valve so that a constant flow of liquid may be obtained in one direction regardless of the direction or the rotation of the driving pulley or gear. The manufacturer claims that the pumps are adapted for tractor and marine engines for water and oil circulation, gas and oil service stations, automatic water systems, farm uses, brine circulation, fire engines, refrigerating systems, for machine tools for cutting fluid circulations and for force feed lubrication of bearings.



The Rollway Roller Pump: At Left, the Pump Chamber Showing in Phantom the Two Rollers That Rotate Eccentrically and Cannot Be Clogged; at Right, the Complete Assembly That May Be Installed in Any Position.

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TRUCK SALES MANAGERS' ANNUAL MEETING.

The annual meeting of the National Association of Motor Truck Sales Managers will be held at Detroit at the Hotel Statler, Nov. 7-8, this being determined at a special meeting of the board of directors of the organization held at Chicago the first week in August.

The association is the outgrowth of a meeting held a year ago at Detroit of three men, J. E. Tracy, sales manager of the Sterling Motor Truck Co., Milwaukee, Wis.; Hal T. Boulden, vice president of the Selden Truck Sales Co., Rochester, N. Y., and E. T. Herbig, sales manager of the Service Motor Truck Co., Wabash, Ind., at which the possibilities for organization were considered.

The result of this conference was the formation of the association at a meeting at Cleveland in November, when officers were elected and a general plan for operating was determined. The present officers of the association are as follows:

President, J. E. Tracy, Sterling Motor Truck Co., Milwaukee, Wis.; first vice president, Hal T. Boulden, Selden Truck Sales Co., Rochester, N. Y.; second vice president, W. D. Rightmire, Winther Motor Truck Co., Racine, Wis.; secretary, E. T. Herbig, Service Motor Truck Co., Wabash, Ind.; treasurer, A. H. Fernald, Willys-Overland Co., Toledo, O.; directors, A. C. Burch, Clyde Cars Co., Clyde, O.; H. F. Harris, Bethlehem Motors Corporation, Allentown, Pa.,; and F. L. Pierce, Federal Motor Truck Co., Detroit.

During the meeting at Detroit a complete report will be submitted on the National Motor Truck Development Tour, which is now being made through the northwest under the auspices of the association. The annual meeting will be arranged by J. C. Ayers of the Denby Motor Truck Co., who is chairman of the entertainment committee.

PROFIT SHOWN BY KELLY-SPRINGFIELD.

Net profits of $2,019,638 from a gross profit of $3,762,381 are shown for a six months' report of business closed by the Kelly-Springfield Tire Co., New York City. Federal taxes incurred during 1918, but appearing for the first time on this statement, amount to $1 285,946, and the usual dividends amounting to $639,305, bring the surplus to $9,330,962, as compared with the previous surplus, $9,202,683.

BROWN GOES TO WESTERN CARBURETOR CO.

C. F. Brown, former editor of the Alma, Mich., Record, has been appointed Michigan sales manager for the Western Carburetor Co., Alma, Mich. T. Arnold Robinson has been made sales manager for New York state for that company.

The general offices of the Bull Tractor Co. have been moved from Minneapolis, Minn., to Anderson, Ind., and have become a part of the Bull Tractor Madison Corporation organization.

Trucks and Trailers Retained for Army Equipment.

Washington, D. C., Aug. 5—The policy of the War Department is to retain for the service of the different branches of the army more or less power truck equipment selected from what has been delivered, and which has not been used to any extent. So far as is possible the department will utilize those types that have been largely developed and which have been found to be the most practical in actual military operations.

Brig. Gen. Drake, Motor Transport Corps, announces that the following types of trucks and passenger automobiles will be retained by the army for its use:

Type one: Passenger cars: Medium, open, Dodge; medium, closed, Dodge; heavy, open, Cadillac; heavy, closed, Cadillac.

Type two: Light delivery truck: ½-ton light delivery, Dodge; ¾-ton, White; ¾-ton GMC; one-ton White, Tebo.

Type three: 1½ and two-ton trucks: White, Garford, Packard.

Type four: Three and four-ton trucks: Standardized "B;" Riker; Mack, 3½-ton trucks; F-W-D.

Type five: Five-ton trucks or over: Mack, 5½-ton trucks; Mack, Special Engineer.

Type six: Motorcycles: Harley-Davidson.

Type seven: Ambulances: GMC.

Type eight: Trailers, cargo: Trailers, ¾-ton, tank, water, 180 gallons; trailers, ¾-ton, ration and spare parts; trailers, 1½-ton, two-wheel, light aviation; trailers, 1½-ton, four-wheel, cargo; trailers, 1½-ton, four-wheel special bodies; trailers, three-ton, gun and cassion; trailers, four-ton, four-wheel, cargo; trailers, four-ton, four-wheel, special bodies: trailers, five-ton, tire press; trailers, 10-ton, portable crane; trailers, 10-ton, tank corps with ramp.

Type nine: Trailers, kitchen: Trailers, 1½-ton, two-wheel, kitchen, A and B type.

Type 10: Trailers, machine shop: Trailers, four-ton, four-wheel, machine shop—spare parts.

Bicycles: Westfield.

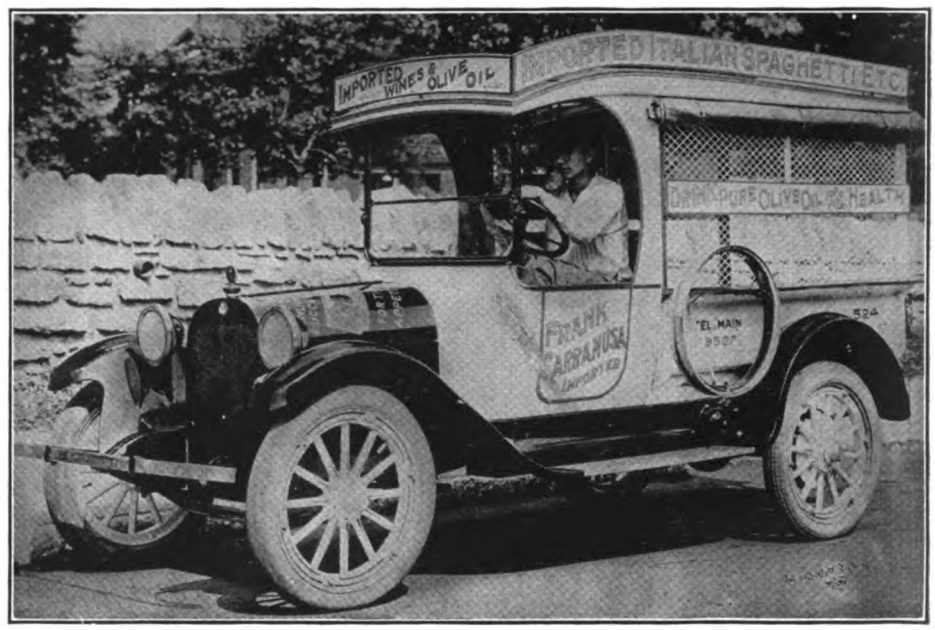
None of these machines will be placed in the surplus equipment. The statement says specifically that these cars are not placed as army standards at the present time.

ADVERTISING VALUE OF ATTRACTIVE DELIVERY EQUIPMENT.

The advertising value of attractive delivery equipment is not lost by progressive business men, though there is little probability that any one of them could appraise it in terms of money and comparatively few are aware of the real possibilities. There is no question that the more ornate a vehicle body is the more conspicuous it becomes. There are those who believe that display may be too spectacular, but good judgment would dictate that a body should be decorated to such a degree as to impress those seeing it. This advertising is so much gain beyond normal service.

The panel body affords the greatest space, but a screen side body, such as used by many business men can be made very sightly. An excellent example of what may be done by a capable painter is shown in the accompanying illustration of a Dodge machine that is used by a Kansas City business man, which without doubt has already proven to be a very profitable proposition, with a long service life to be anticipated.

The Andrix Lock-Nut Co. of Adrian, Mich., has purchased the Austin & Rose planing mill property at Adrian. Lock nuts and automobile specialties will be manufactured.



A Dodge Chassis Equipped with an Artistically Decorated Delivery Body That Has Much Advertising Value for a Kansas City Business Man.

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NEW JERSEY LAW AIMED TO CURB CAR THEFTS.

In an attempt to curb automobile thievery and disposal of stolen cars, New Jersey has passed a law requiring issuance of a manufacturers' bill of sale with every disposition of a new car or truck, and transfer of this bill, with similar documents covering later sales, with each additional change of ownership of the vehicle. The law also prohibits sale or purchase of a motor vehicle unless it bears the manufacturer's number, uneffected by obliteration, erasure or mutilation.

The act requires that the manufacturer's number be given on the original and each succeeding bill of sale, and assignment of the original bill to each successive purchaser must be before a notary.

As an indication of the state's intention of making the law effective a fine not to exceed $2000, or a maximum of two years' imprisonment, or both, is provided.

NEW GENERAL MOTORS PLANT AT ST. LOUIS.

A new plant costing $5,000,000 will be erected for the General Motors Corporation at St. Louis, Mo. A site, valued at $750,000, has been purchased and the erection of buildings costing $2,500,000 will be begun at once. The production of Buick and Chevrolet cars there will require machinery costing about $1,500,000. The building plans, it was said, provide for the construction of additional units to double the capacity of the plant within the next 12 months.

HIGHER DIVIDEND FOR THE PACKARD COMPANY.

An increase in the quarterly dividend of the Packard Motor Car Co., Detroit, from 2 to 2½ per cent. was made recently, placing the stock on a 10 per cent. basis. The dividends declared were payable July 31 to stockholders of record July 15.

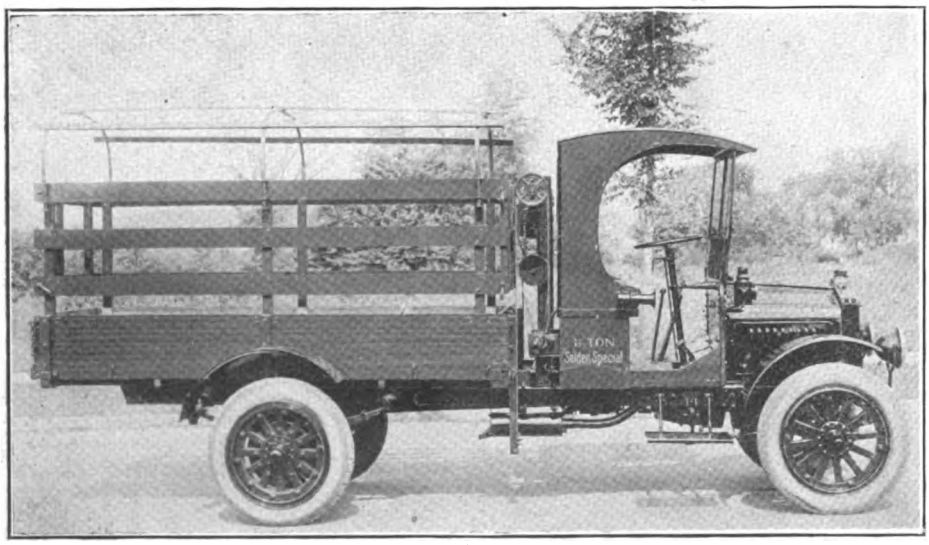
Selden Five-In-One End Dump Hand Hoist Body

A combination convertible body for truck chassis has been developed by the Selden Truck Sales Co., Rochester, N. Y., which can be supplied to order with Selden machine, which is claimed to meet satisfactorily practically all the needs for general haulage. It is especially suited for farm work where the loads carried vary widely in bulk, and converted as necessary the machine may be made very economical and of time and labor. In the accompanying illustration a one-ton Selden special chassis is shown equipped with this body, which is known by the trade term "Five-in-One."

This body can be as required a platform, express, open stake and rack, covered stake and rack and end-discharge or dumping, and as illustrated the body is complete. The conversion can be made quickly and without special tools or heavy labor. The platform is constructed to have space 120 inches long and 44 inches wide with the sides and ends in place. The sills and bolsters are oak and the floor and the side panels are yellow pine ⅞ inch thick, reinforced with 10 gauge guard irons. The stakes are oak, 1¾ by 2½ inches and the stake panels are ⅞ inch yellow pine. As constructed the body has a permanent front end or panel, but the sides and tail gate are removable, the sides being mounted with stakes seated in pockets.

The platform without the sides and tailgate can be utilized for hauling brush, logs, cord wood, farm machinery, etc., and with the addition of the 14-inch sides and tailgate it becomes a standard type open express body that can be used for general purposes. As this body can be elevated by a manually operated hoist, it can be used for hauling grain, sand, gravel, coal or any commodity that can be quickly discharged. Fertilizer can be hauled and piled or spread as may be desired. With these bodies contract work can be undertaken with reasonable certainty of good returns. The rack sides and ends can be quickly installed in the sockets on the sides and the edges of the platform and the body is then adapted for carrying light and bulky loads, or it is suited for carrying cattle if these are to be transported such a distance that walking would cause a shrinkage of weight.

If the loads are to be made up of fruit or vegetables, such as berries, peaches, grapes, tomatoes, celery, asparagus, melons, or farm crops that can be placed in baskets or crates, racks or light platforms placed between tiers will effectually prevent damage. In the event of storm a tarpaulin cover may be supported by three top bows of ¾-inch iron pipe, the ends of which fit into top sockets in the stakes, these bows being maintained in position by oak battens two inches wide.



Selden Special One-Ton Chassis Equipped with the Latest Type Five-in-One Body, Quickly Convertible, Equipped with a Hand Hoist for Rear End Discharge.

NEW OWNERS CONTROL ABBOTT-DOWNING CO.

The controlling interest in the Abbott-Downing Co., maker of Concord trucks and builder of wagons for a century, has been purchased by M. A. Sevigne of Boston and Nashua, a manufacturer of the Sevigne Wrapping Machine, and president of the National Wrapping Paper Co. He has been elected president and managing director, and F. J. Sevigne, a brother, is a director and assistant to the president.

Marcel Theriault of Nashua has been made manager of the plant, which has increased production facilities. There will be placed on the market shortly a delivery truck designed for the bakery trade.

GREAT LAKES MALLEABLE CO. GETS PLANT.

The Great Lakes Malleable Co., Milwaukee, Wis., is a new corporation with $100,000 capital. It is proposed to rebuild the former Maynard steel foundry at 710-20 Reed street, that city, for a malleable plant to manufacture automotive and agricultural castings. W. T. Hersher, formerly of the Eastern Malleable Iron Co., Bridgeport, Conn., and more recently manager of the malleable foundry of the Chain Belt Co. of Milwaukee, Wis., is president and general manager. F. J. Vea, head of the Stoughton Wagon Co., Stoughton, Wis., is a heavy stockholder and an officer in the new concern.

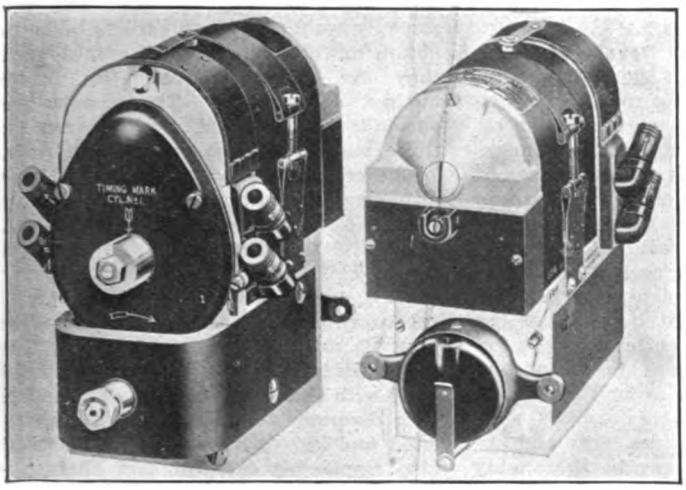
DODGE BROS. TO ERECT STEEL PLANT.

Dodge Brothers, Detroit, Mich., is reported to have purchased a tract of 278 acres on the West river front on which large blast furnaces and steel rolling mills are to be erected. The price for the tract is stated to be $2,085,000.

The Clover Manufacturing Co., Norwalk, Conn., is to erect a building 90 by 220 feet, another structure 35 by 60 feet and a basement 21 by 52 feet, at a cost of $90,600.

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NEW EISEMANN MAGNETO-GENERATOR



The New Eisemann Magneto-Generator: At Left, the Front or Drive End, Showing Plug Wiring Terminals; at Right, the Rear End of the Unit.

COMBINATION of a magneto and a generator has been made by the Eisemann Magneto Co., Brooklyn, N. Y., in a single unit that is interchangeable with any engine equipment that conforms to S. A. E. specifications, so that, for instance, the magneto may be removed from any engine and replaced by the Eisemann unit, which will supply ignition current and will generate sufficient energy to light any average system of lamps. The generator will generate current for any starting motor aside from the heaviest engines. No changes whatever are necessary for the installation of this instrument.

This machine is suited for use on trucks and cars of all kinds. It is waterproof and it is so constructed that on top of the high-tension magneto is a remarkably compact magneto. The two are electrically independent of each other, but are mounted on the same base, have the same drive shaft and coupling, such as would be used for a magneto only. The generator can be removed and the magneto used singly. Aside from seven-eighths inch greater height no more space is required than for a single magneto. Statement is made that the unit is positively interchangeable with any standard four-cylinder magneto, even to using the old bolts and couplings.

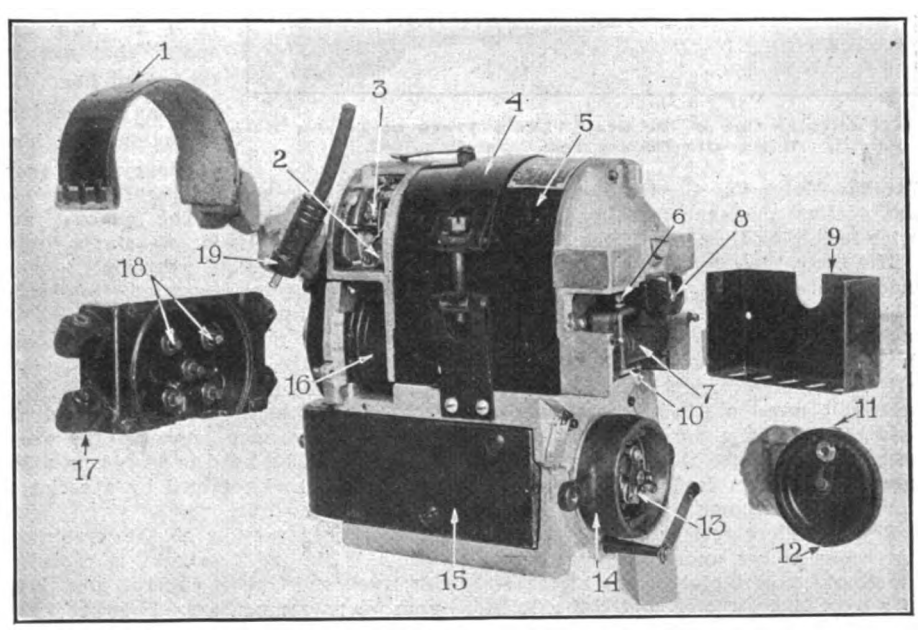
The magneto and generator are independent. The magneto has its own permanent magnet field and the generator has an electro-magnetic field. The generator unit is installed on top of the magneto and it is driven from the main shaft of the magneto through a train of three gears. The teeth of the gears are helically cut and as they run in grease they are practically noiseless. The intermediate gear is non-metallic and it carries the rotating disc that distributes the magneto current to the different spark plugs. By this construction the parts necessary are minimized without variance from standard magneto practise. All of the rotating members are mounted on highest grade annular ball bearings.

The generator unit may be removed entirely without interrupting the utility of the magneto unit. This is a decidedly valuable quality from the fact that should the generator need attention mechanically the car or truck can be used with the magneto only. The removal or replacement of the generator can be done with the simplest tools and in brief time, and can preferably be done on the engine without disturbing the magneto or its drive.

The magneto unit is a standard Eisemann instrument, slightly modified in shape, having all of the qualities and most all of the parts of the well known type G-4 magneto, and the important elements, such as the winding, the mica condenser and the efficient breaker mechanism as identical. The distributor block varies only in the method of application, the unit cast housing differs only in external shape and the Eisemann spark timing is retained in slightly different form. The instrument can be furnished for either clockwise or counter-clockwise rotation with variable or fixed spark. It is now built for four-cylinder engines only, but will probably shortly be ready for six-cylinder engines.

The generator unit is built for six volts as standard. The output of current is rated at 80 watts, although the maximum current of the six-volt machine is 12 amperes when used for both lighting and starting, and is 10 amperes when used for lighting only. The regulation is by a third brush, a standard form of control that is thoroughly understood by electrical mechanics. The generator is designed for a single wire system and there is but one generator binding post. To protect the battery against discharge at low speeds a cutout relay is installed in the machine. This is protected by a rectangular cover, which can easily be removed should adjustment of the relay be necessary, which can be done by the regulating screw. The weight of the magneto generator is but 24 pounds, which is approximately but 35 per cent. in excess of the standard magneto containing similar parts. The comparatively light weight has been obtained by the use of aluminum, with the additional advantage of great strength of the housings, etc.

With the magneto generator a switch panel is used that is finished in black enamel and polished nickel. This panel carries a three-point switch for controling all the lights, as well as the ignition, and there is also a flush type ammeter of reliable make that indicates the charging or discharging current. The ignition may be controlled or securely locked by a 26-change pin tumbler lock, for which two keys are furnished. The unit is especially desirable for truck equipment with lighting systems for night work.



Principal Parts of the New Eisemann Magneto Generator: 1, Dust Cover for Commutator; 2, Generator Commutator Brush; 3, Generator Third Brush; 4, Strap Holding Generator to Magneto; 5, Armored Generator Field; 6, Cut-Out Relay Adjusting Screw and Lock Nut; 7, Cut-Out Relay; 8, Generator Binding Post; 9, Ventilated Cover for Cut-Out Relay; 10, Two-Ampere Fuse in Shunt Circuit; 11, Ignition Cut-Off Cable; 12, Waterproof End Cap for Breaker Box; 13, Breaker Contact Points; 14, Timer Lever Body; 15, Magneto Magnet; 16, Distributor Rotating Disc and Segment; 17, Waterproof Distributor Block; 18, Distributor Brushes; 19, Waterproof Cable Terminals (four used).

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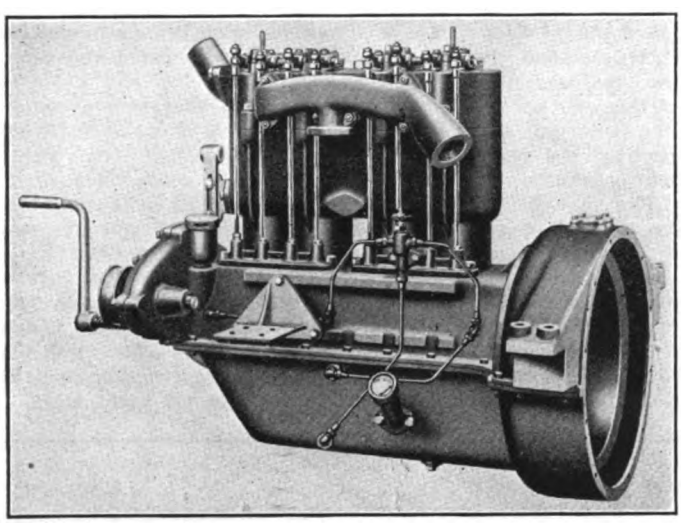
GRAY VICTORY HEAVY DUTY ENGINE

A SMALL heavy duty type engine that has been given the trade name "Victory motor," is now produced by the Gray Motor Co., Detroit, which is claimed by the manufacturer to be equally well adapted for car, truck and tractor propulsion and which has qualities that are exclusive with this unit. While the design follows conventional practise, it has been very carefully refined and perfected, and the engine is regarded as being very powerful and economical for its rating.

The engine is unusually accessible for inspection and work and all moving parts are protected against the influence of abrasives. All factors of safety and very large and the unit is extremely clean.

Engine Has High Power Production.

The company states that its purpose is to produce but a single size of engine and that this will be built in whatever number may be required. The works of the company is under the management of William A. Blackburn, who was with the Cadillac Motor Car Co. for 12 years and was factory manager for that concern prior to joining the Gray Motor Co.



Left or Valve Side of the Gray Victory Truck or Tractor Engine, with Rocker Arm Cover Removed.

The Gray Victory engine is a four-cylinder, water cooled, four-cycle, vertical, I head type, having cylinder bore of 3½ inches and stroke of five inches, the S. A. E. formula giving 19.60 horsepower, but the manufacturer claims that the unit will develop 34.60 horsepower at 1900 revolutions a minute, which would seem to indicate that the maximum power production is 75.63 in excess of the standard rating.

The cylinders are cast en bloc with the water jacket and the upper half of the crankcase integral from a high grade of seasoned gray iron, and the cylinder block head, which is generously water jacketed, is a separate unit. In reality the engine is four sections, the valve cover, the cylinder block head, the cylinder block and upper section of the crankcase and the lower crankcase section. The cylinders are offset to minimize the side thrust of the pistons on the cylinder walls during the compression and power strokes.

Cooling Carefully Developed.

The external walls of the cylinders below the water jacket are round and comparatively thin, and there is a space between the second and third cylinders that exposes practically the same area to atmospheric radiation as of the first and fourth cylinders, this being depended upon to considerably reduce the temperature and promote lubrication. The water inlet of the cylinder jacket is at the center of the block and at the base of the cylinders. The water outlet is at the forward end of the block head and the water must circulate around and over the combustion chambers.

The water chambers are large and are so formed that they may be thoroughly cleared and positive radiation insured. The crankcase section of the block has a vertical transverse web that carries the center main bearing, and a forward extension houses the timing gearset and a rear extension in the upper half of the flywheel bell housing. Much care is taken in machining the units and the combustion chambers are finished to insure uniformity of compression. The cylinders are reamed and finished by grinding.

The design of the block head is unusual in that it is so cored for two intake passages that there are two "hot spots" that are intended to heat the fuel gas and produce exceptionally high efficiency and economy with a comparatively low grade of gasoline. The exhaust and intake manifold is a single unit, the intake being extremely short and the carburetor is carried close to the manifold. This manifold also has a "hot spot" so that the fuel is twice increased in temperature in passing from the carburetor to the cylinders. The carburetor is at the left side and the manifold has sufficient clearance only for the valve push rods. The head is seated on a McKim gasket and retained by a series of heat treated studs.

The lower section of the crankcase, which is the oil reservoir, is cast iron for truck and tractor engines, and aluminum for passenger cars. This has a rear extension for the lower half of the flywheel bell housing, and a large drain plug for the oil reservoir. Seated in this section is a steel pan in which are the oil troughs that form the bottom of the crank chamber.

The Reciprocating Member.

The pistons are cast from fine gray iron, are comparatively light and are strongly webbed. Much care is taken to obtain uniformity of wall thickness and they are specially treated to insure against deformation. The pistons are carefully turned and are grooved for three single-piece diagonally split rings.

The crankshaft is a three-journal type drop forged from high grade steel, that is heat treated and ground to dimensions. With this the flywheel flange is forged integral. The journals from front to rear are 2¾, two and 3⅜ inches length, a total bearing length of 8⅛ inches. The journals are two inches diameter. The camshaft is drop forged from a special steel with the cams integral and is 15/16 inch diameter. The shaft is case hardened and carefully ground. This shaft also carries an integral cam that operates the plunger of the oil pump, that is driven by a helical gear. The connecting rods are I section steel drop forgings that are heat treated.

Bearings and Other Details.

The main and connecting rod bearings are die cast babbitt metal seated in bronze cages. The main bearing caps are malleable iron set into the cylinder block and retained by heat treated studs and castle nuts secured with cotter pins. The crankpins are 1¾ inches diameter and the bearings are two inches length and are die cast babbitt metal, fitted with laminated shims and secured by nickel steel bolts and castle nuts and cotter pins. The bearings of the camshaft are cast iron, integral with the cylinder block, of large size, and the wristpins are hardened and ground steel tube secured in the piston bosses by set screws. The small ends of the connecting rods, which oscillate on these pins, are bushed with bronze.

The timing gearset gears are helical cut, are large diameter and ⅞ inch faces, the camshaft gear being cast iron and the crankshaft and magneto shaft gears steel. The timing gear case cover is flanged for attaching a governor drive. It is malleable iron and carries the heavy trunnion that supports the forward end of the engine. The cover is retained by cap screws, lock washers and dowel pins.

The valve ports are 1 21/32 inches diameter and the valves have cast iron heads and carbon steel stems. The valve tappets are a mushroom type that are mounted in long renewable guides. The push rods are adjustable at the upper ends, relation being obtained by adjusting nuts. The rocker arms are mounted on the cylinder head and these are enclosed by a cover that is retained by studs and nuts.

A starting motor flange is provided for on the flywheel bell housing and an ignition generator, a light generator, magneto or both may be mounted on a detachable magneto or generator bracket and driven by a standard two-bearing magneto shaft and coupling.

Cooling and Lubricating Systems.

The engine is cooled by a thermo-syphon circulation of water and radiation is insured by a fan mounted on an ad-

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justable malleable iron bracket on a large bearing that is driven by a flat belt from a pulley on the forward extension of the magneto shaft.

The lubrication system is claimed to be very efficient. The oil is drawn from a screened well in the reservoir by a plunger pump that is self-priming and fitted with a double check valve. The oil is forced through tube to the three main bearings and the timing gearset, and the overflow fills the oil troughs, the lubricant being distributed by splash to the cylinder and pistons, wristpins, camshaft bearings and cams and valve tappets.

The excess oil drains to the oil reservoir and is again circulated. The oil reservoir will hold five quarts and a positive dial indicator shows the oil level. To insure against mishap when the gauge shows the reservoir empty there is sufficient oil remaining in the reservoir to drive several miles with safety.

The flywheel is secured to the crankshaft flange by six heat treated bolts and it is regularly furnished to fit standard clutches used with the S. A. E. No. 3 bell housing.

STEWART TRUCK DECLARES DIVIDEND.

The board of directors of the Stewart Motor Corporation, Buffalo, N. Y., has declared a quarterly dividend of two per cent. on preferred stock and 2½ per cent. on common stock. The company will occupy its new plant about Sept. 1, which will be operated in connection with the present works.

NEW EISEMANN SERVICE STATION AT CLEVELAND.

The Cleveland Ignition Co., 1843-7 Euclid avenue, has been made the official service station for that city and the counties of Cayuhoga, Lorain, Medina, Summit, Portage, Geauga and Lake, by the Eisemann Magneto Corporation.

Simplex Four-In-One End-Discharging Truck Body

A type known as "Four-in-One" bodies for power trucks is now built commercially by the Simplex Manufacturing Co., Inc., Conneautville, Pa., for which H. B. Dailey, Chicago, is general sales agent. This body is constructed to a standard design and is adapted for chassis from one to 3½ tons.

The body can be used for a great diversity of work as it may be at will a clear platform, stake platform, express or end discharging, the time required for conversion being very brief. The body is strongly built of high grade materials and it is reinforced with steel angles and straps to obtain maximum strength with comparatively light weight and to protect it against wear.

The body is built on a series of seven bolsters that are mounted on the side sills, and these sills are hinged at the rear of the chassis frame and are carried on the hinges and two crossbars. The deck of the platform is encircled with a heavy steel strap and at the front and the sides are series of stake pockets formed in the deck with strong reinforcements at either side of each pocket.

The sides, front and tail gate are 15 inches height, with the sides formed with flare boards, and the standard inside dimensions are from 90 to 138 inches length and from 52 to 58 inches width. The tail gate is either dropped to any desired angle or it may be swung from the top and retained with a latch until the cargo is to be discharged.

The chassis is fitted with a manually operated hoist, the lift being by a cable wound on a shaft and actuated by a hand crank through a train of gears. Statement is made that the body can be elevated to maximum height in 40 seconds, and lowered in even less time. The tower of the hoist is heavily built and yet requires but nine inches space back of the driver's seat or cab.

The manufacturer claims that the body can be converted from an express type to a clear platform in approximately three minutes, and that the platform or stake platform can be converted to an express type in a very brief time. The body is particularly adapted for farm work, for contractors use or for any service where a series of bodies would ordinarily be necessary to obtain maximum efficiency.

TRUCKS AT ELECTRICAL EXPOSITION.

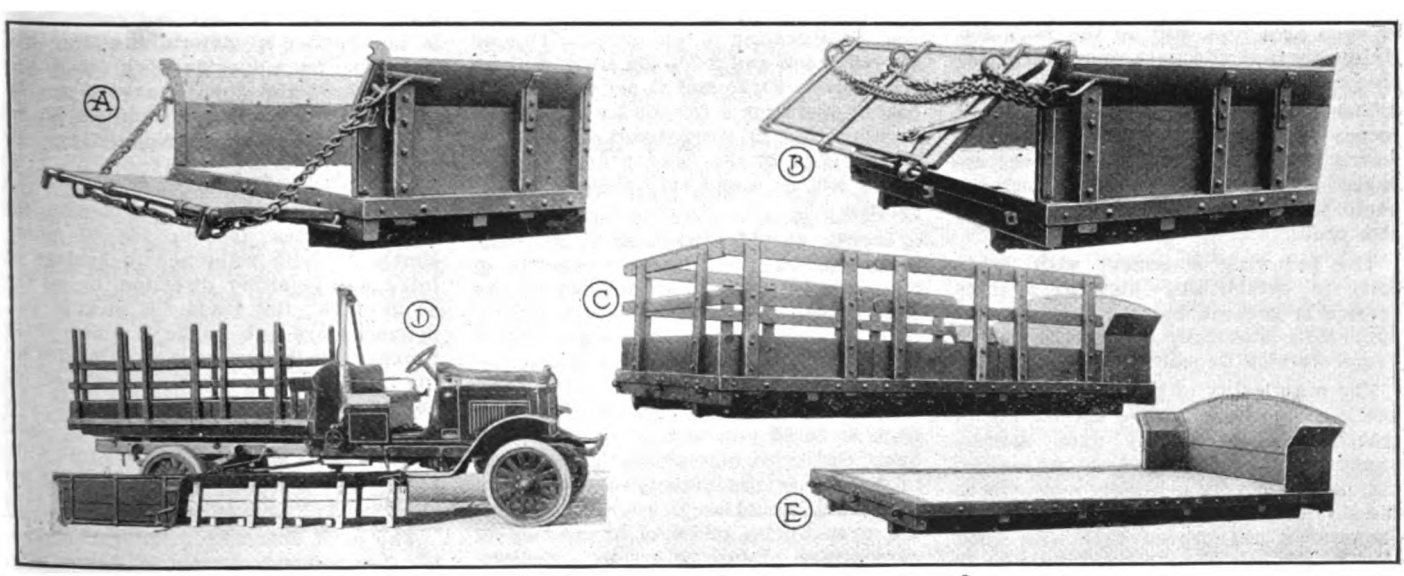
At the annual New York Electrical Exposition, which will continue 10 days from Sept. 24 at the Grand Central Palace, New York City, will be exhibitions of electric trucks of different sizes and types. The exhibitors will include the Ward Leonard Vehicle Co. of Mount Vernon, N. Y.; the Commercial Truck Co. of America of Philadelphia and the Walker Electric Vehicle Co. of Chicago. Vehicle batteries will also be exhibited by the Electric Storage Battery Co. and the Philadelphia Storage Battery Co., both of Philadelphia. The Bennage Co. will also show a new type electrically heated vulcanizer.

MARX TRAILER CO. INCORPORATED.

The Marx Trailer Co., successor to the California Trailer and Radiator Co., San Diego, Cal., has been incorporated with capital of $200,000 and operations on an extensive scale will shortly be begun. The company has manufactured light trailers for three years, and of late has specialized a camp outfit. S. S. Marx is manager of the company.

BRADEN MADE VICE PRESIDENT.

The Canadian Westinghouse Co., Ltd., Hamilton, Ont., has elected N. S. Braden, formerly sales manager, a vice president, and H. M. Bostwick has been appointed sales manager to succeed Mr. Braden.



Simplex Four-in-One Body: A, Express Body with Flareboard Sides, 15 Inches High and Drop Tailgate; B, with Swinging Tailgate for End Discharging, with Hand Hoist; C, Rack Platform Body with Side 42 Inches High; D, Simplex Body Complete; E, Clear Platform Body.

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HIGHWAY TRANSPORTATION COST

The Factors that Have Bearing in Determining the Possibilities of Public Service and On Which Depend in Large Part Success or Failure.

THOSE who consider the use of power trucks for public service freightage are reasonably satisfied that machines can be obtained that will have endurance and can be kept mechanically operative. The main question to be determined is how can they be best utilized so they can be made profitable at rates that will not be rejected by those requiring haulage.

Highway transportation has generally been engaged in by those who have no realization that organization and scientific management are highly essential to success. If they have used animal vehicles they fail to understand that methods that might be profitable with that type of equipment will be unproductive if continued with power trucks.

They fail to grasp that productiveness is dependent upon economy of time and labor and that these economies are in ratio to their own systematization and organization. They do not appreciate the need of maintenance of trucks mechanically, so that there will be minimum loss of service time and the least expense consistent with obtaining the longest practical service life.

There is almost universal neglect of accounting, because clerical work is seemingly an expense. That is to say, the owners know that they pay for this work and do not utilize the datum obtained, or, if they do use it, do not have clear knowledge of the economies obtained or obtainable.

With reference to rates for work, these are usually established with no accurate facts to determine cost. The rates ought to be what will yield a fair profit above all expense of operating, and not based on what another, operating without profit or even at a loss, will do the work for. Unless there is adequate return any business cannot be continued.

Those who want service must expect to pay for it. It cannot be afforded unless it is paid for, and any man who engages in transportation by highway ought to be certain that he is operating at a profit.

The following statement with reference to establishing highway haulage service is general, but the facts can be applied to practically any enterprise:

Truck Service Depends on Maintenance.

The practicality of power vehicle haulage is unquestioned. The service life of trucks depends entirely upon maintenance. Five years, or 100,000 miles driving, has been very generally accepted as the service period of truck serviceability. Experience has proven that with good care trucks can be used from seven to 10 years and 200,000 miles is not too large a total to expect from a first class machine worked in city or country.

Freight haulage by power truck is practical for almost unlimited distance. There is a line of demarcation for transportation economy as measured by terms of money values which will depend largely upon local conditions. By this is meant that if the haulage is to be done at the lowest possible cost without regard to time, the distance is very short—from 12 to 15 miles; but if time value is to be considered then the economy is in ratio to the need. Other means of transportation referred to are rail and water carriers, including express and parcel post.

The business man often regards freight charges as the entire cost, when as a matter of fact he has neglected to include the expense of packing, loading, hauling to and unloading at a freight house or pier, or the cost of loading, hauling, unloading and possibly other charges at the other end of the haul. Were these and clerical work supervision and general business overhead added the cost might be increased very largely, especially in large cities, where there is more or less traffic and freight congestion, where the cost of labor is high and the moving or actual haulage time is reduced from delays.

Using freight trucks goods may be packed with only such care as will insure against damage. But two handlings are necessary—loading at the store, warehouse or terminal and unloading at the place of delivery. The economy of time and labor is obvious. This is applied to the trucks alone and labor cost is not included.

Larger Units Most Productive.

The larger the truck unit the greater the earning. Generally speaking the cost of operating a ton truck, a two or 2½-ton truck and a 3½-ton truck will be respectively 50, 75 and 85 per cent. of the cost of operating a five-ton truck, and the earnings will be respectively 20, 40-50 or 70 per cent. of the five-ton unit. These ratios will be found very close in actual service.

Trucks should always carry capacity loads and the productiveness depends on the ratio of the loaded mileage to the total mileage. To deliver a load and return without a load means a productive mileage of less than 50 per cent., assuming full load was carried. To carry a full freight in both directions would mean from 90 to 95 per cent. productive mileage. Only the moving or driving time of trucks is productive. Loading and unloading should be as rapidly as possible, even to the extent of hiring helpers or platform crews or freight handlers. Lost truck time is absolutely beyond recovery.

Time economy is obtained by keeping trucks moving. Fast driving may be dangerous and destructive of trucks mechanically. Quick loading (even if obtained by considerable investment in terminals, in loading platforms, in differing equipment) means more working time for the trucks. Delivery cannot always be controlled, other than by having additional helpers, or agreement with the receiver of freight to facilitate unloading by having workers available, the platforms clear and attention to details that can be controlled.

Fast Driving Is Not Economy.

Driving time need not be economized by moving at top speed without reference to road conditions. The routes should be carefully chosen to avoid congestion, steep grades, rough surfaces, dangerous descents, infrequent ferries, open bridges, etc. The routes can be selected and even mapped for the information of drivers. The speed should be not in excess of what is recommended by the truck manufacturer. Fast speed means excessive fuel consumption, rapid wear of tires, quick deterioration of mechanism and probability of damage through accident. The steady driver will accomplish more in a day than one who is constantly accelerating and decelerating his machine.

The truck that is kept moving eight hours a day by careful administration, good routing, quick loading and unloading, care that will obviate road delays and time loss is an ideal, as measured by works usually engaged in. But there must be a standard by which to determine results. Efficiency and economy can be obtained by doing a work for a given cost, or, preferably doing more work at no increase of cost or doing the stated work at a decreased cost. There is no manner of determining the time necessary for a specific work other than experiment, and then economy can result with varying use of equipment, organization or methods of operating.

Full Loads for All Mileage.

Organization of freighting service for long distances (50 to 150-200 miles) should be with reference to haulage of full loads in either direction, or, so far as practical, full loads. If pickups and deliveries are to be made of considerable weight or bulk trailers may be hauled by the loaded trucks. Trailers, however, reduce road speed approximately 25 per cent. and increase the operating cost from 15 to 25 per cent. as compared with the truck alone, but the earning may be double that of the truck.

The most economic manner of operating comprehends terminals, having stations for receiving and delivering freight. The freight may be classified with reference to weight, minimum, excess, etc.,

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and to three classes of service: 1, delivered by the shipper at one terminal and called for by the consignee at the other; 2, collected at one terminal, hauled and the consignee notified to call for it, or delivered by a shipper, hauled and delivered to the consignee; 3, collected for one terminal, hauled and delivered from the other terminal. This is in effect a combination of both freight and express handling. Collections and deliveries under this system are paid for in addition to the haulage charge. The rates can be established accordingly.

Freight Rates Must Yield a Profit.

The rates must be based on what will afford a sufficient profit in excess of the operating cost. Operating cost cannot be estimated with anything like certainty. An approximation can be reached which must be based on two classifications of cost: Fixed or overhead, and operating or variable. The former will include: Interest on investment at normal return of capital; taxes on vehicles; registration fees; insurance (fire, property, liability); storage (garaging); office (including supervision), pro rated to each vehicle. The latter will include: Tires, on basis of guarantee; fuel, lubricant (including grease, etc.), supplies, repairs and upkeep, and depreciation. To these must be added the wages of the driver and helper and the annual overhaul cost, which will be approximately 10 per cent. of the cost of the chassis.

The overhead is prorated over the working days of the year. The variable costs (which may include the wages of the driver and helper if not paid salaries), are reduced to miles, and if, for instance, the truck is driven 100 miles, the mileage cost is added to the fixed cost. Assuming the fixed charge, including overhead, driver's wage and annual overhaul pro rata is $8, and the variables will average 25 cents a mile, then the total cost will be $25 plus $8, or $33 for the day. To this must be added a fair profit, for this does not include profit, nor does it include the cost of doing business.

The Application of Costs.

If the mileage is small the cost a day may be in ratio, but the earnings are correspondingly decreased. The greatest profit is made from the greatest earnings. If the loads are not to capacity the earnings shrink very rapidly and the operating cost is not decreased.

The overhead charge is theoretically applied every day, but it is only charged against working days so that it may be included in the operating cost that there shall be no loss to the owner. Depreciation is charged to one sinking fund with which to replace the vehicle at the termination of the depreciation period; the annual overhaul cost is charged to another sinking fund which is wholly or partly expended annually to restore the machine to serviceability. These funds may be credited as desired.

The cost of operation can only be determined by accurate accounting, and this must be by a complete system. The simplest, of course, is the best.

With reference to the practicality of operation. Transportation economy can only be realized by such supervision and record as will account for the time of the vehicles and men. The trucks may be equipped with recorders that will chart the speed, moving time, standing time, stops, etc., for either 12 or 24 hours. From these analysis may be made of work done by each vehicle and crew. Operating two or three different machines and crews over a given route will afford a fair basis on which to judge results. In addition to these daily records on cards of all work done and the supplies used and expense incurred, the mileage, the cause of delays, accidents, etc., are necessary.

Maintenance Must Be Systematic.

The cheapest maintenance is obtained by frequent inspection and adjustment or restoration whenever there is need. If a fleet of four or five trucks is operated a mechanic should be employed whose work shall be done whenever required, day or night, to keep the trucks operative. A shop should be equipped with machine and hand tools necessary for all work that can be done. The trucks should be inspected once a week at least for condition. They should be gone over thoroughly once a month for adjustment. They should be overhauled carefully once a year. They should be driven by the mechanic or the garage foreman, who should be a well trained man, as frequently as he believes necessary, and his recommendations should be followed. There should be a sufficient supply of repair parts to meet all probable needs. If there is a number of trucks, spare units, one or more engines, clutches, transmission gearsets, rear and front axles, springs, radiators and wheels, should be available. The unserviceable unit can be removed and repaired at convenience and a good job done in every case. This will be good economy with a fleet of considerable size.

The main object is to have the trucks serviceable as nearly constantly as is possible. An idle truck is a decided loss.

With regard to freightage. A way bill should be devised that will be a sufficient record for the operating company and shippers and consignees. Insurance should be provided for all freight carried. This can be added to the rate charged.

Rates Based on Operating Cost.

The rates must be based on operating cost. Where the highways are hard surfaced and good time can be made practically all of the year the rate should be such as will yield a revenue of 50 cents a loaded vehicle mile for a ton truck, 75 cents a loaded vehicle mile for a two-ton truck, 85 cents a loaded vehicle mile for a 3½-ton truck and $1 a loaded vehicle mile for a five-ton truck, this being based on capacity loads for hauls of 60 miles or more, the load to be carried half the distance. Example: If a five-ton load is carried 50 miles and the truck must return empty, a $50 charge for the work would earn 50 cents for each mile driven. If a load can be carried in either direction a charge of $35 each way would net 70 cents a mile.

Were a fixed daily cost $8 and the operating cost 25 cents a mile, and an hourly rate were required, the basis of computation would fairly be on an assumption of 100 miles as a day's work. The cost for driving this distance by the two factors would be $8 plus $25, or $33. Add to this 15 per cent. of $33, or $4.45, and the charge would be $37.45, which would not be excessive. The mileage driven, however, might be comparatively small. This would compensate for the seemingly small earning.

At the other hand, assuming the rate to be $50 for a drive of 50 miles and return. The operating expense as above computed would be $33 and the earning would be $50, which would net $17 for the work.

Emphasis must be made that rates that would be sufficient to afford satisfactory profit might be inadequate if applied to all localities.

Operation Should Be to Schedule.

The operation of the truck should be as nearly to schedule as is possible. The machines should be directed by a dispatcher who shall have record of the times fixed for arrival and departure from each station. The nearer railroad operation can be followed the better the results.

Trucks should not carry loads in excess of the ratings. The added earning does not compensate for the excessive cost of fuel, oil, tires and repairs.

Power truck freightage service is always a failure if the operations are by the customs the vogue with animal vehicles. Forget horses. Know what a work costs. Charge rates that will yield a reasonable profit.

The chief value of the power truck freight service is the saving of time that is practical. This saving of time is worth money to the shipper. Shippers cannot expect to obtain this economy for the same rates paid for freight or express. Service is what is wanted and this must be paid for.

AUTOMOTIVE LABORATORY FOR UNIVERSITY OF MICHIGAN.

An automotive laboratory for scientific research and testing in motor car development will be opened next fall at the University of Michigan at Ann Arbor, Mich. Two dynamometers will be installed for testing of engines and accessories and a complete chassis testing equipment will be provided for the determination of car and fuel efficiency. The new automotive laboratory will serve as a clearing house of information for the industry and for the general public, testing and reporting upon the value of new equipment, accessories, engine design, chassis weights, the proper displacement of loads and other matters tending toward greater economy and efficiency in design and operation.

NEW ISSUE OF STOCK BY PAIGE-DETROIT CO.

The Paige-Detroit Motor Car Co., Detroit, Mich., according to reports, is about to make a new issue of preferred stock totaling $3,000,000. Should the new issue be brought out the present preferred stock may not be called it is understood.

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OHIO MODEL 61A AND 100B TRAILERS

WITH the addition of two new sizes the Ohio Trailer Co., Cleveland, O., has increased the series of semi-trailers and trailers it produces from seven to nine, which is regarded as being now complete, the capacities ranging from 800-1000 pounds to five tons. The new units are now in production and will be continued as standard stock models.

The complete series is made up of the following units:

40A	Two Wheel	One way	800-1000
41A	Two Wheel	One way	800-1000
50A	Two Wheel	One way	1250-1500
51A	Two Wheel	One way	1250-1500
61A	Two Wheel	One way	1500-2000
100B	Four Wheel	Reversible	1500-2000
200D	Four Wheel	Reversible	4000
300F	Four Wheel	Reversible	6000
500F	Four Wheel	Reversible	10,000

The two new units are models 61A and 100B, and both have the same load rating—1500-2000 pounds. The 61A model is the largest of the two-wheel type and the model 100B is the smallest of the four-wheel series. Of these the former is designed for use with a heavy passenger car or a light or medium sized truck, and the latter is intended for service with any size tractor, either single or in trains.

Follows the Ohio Standard Design.

In a general way the model 61A conforms to the standardized design of Ohio trailers, a substantial dead axle fitted with heavy truck wheels carries two long semi-elliptic springs on which the frame is mounted with the forward spring eyes pivoted and the rear ends shackled. The frame is steel channel section, well gusseted and reinforced and this carries the deck or platform.

The sides and ends of the chassis frame carry the stake pockets, and under the frame at the forward end is mounted the pole or drawbar, which is side braced by substantial steel rods. The drawbar is a pressed steel channel or U section at the end of which is a specially designed leaf spring that has the longest or main leaf in the center, with two supplementary leaves above and below it, these being graduated as to length. The drawbar is strong and its resiliency absorbs the road shocks. On the end of the spring is fitted the coupling. This is a type that can be quickly coupled or uncoupled.

The side and end panels are so designed that they are installed by dropping the stakes in the pockets, and when necessary the unit can be made a clear platform type. It is supplied with either stake panel or with cattle rack bodies, the cattle rack type having an end gate that drops and forms a ramp for loading or unloading cattle, and there are two heavy stanchions at the forward end for tying the animals securely. The rack sides and ends are clamped at the corners to add strength. These bodies are of sufficient size to carry two small animals or one large one. The wheels are wood artillery type, that are installed on heavy roller bearings, and they are shod with solid band truck tires 32 by three inches, these being pressed on.

Model 100B a New Design.

The model 100B four-wheel trailer is the same capacity as the model 61B, and it differs considerably in general construction from the larger sizes, which are also reversible. Statement is made that the engineering experience from more than six years manufacture of trailers has been directed to minimizing weight and maintaining strength that will insure endurance. The design is unusual, but claim is made that service has proven that the construction is enduring and adequate for any work for which a trailer of this capacity may be used.

The axles are standard I section steel drop forgings with heavy yokes that carry the steering knuckles, and these steering knuckles are coupled by adjustable tie rods. The wheel spindles are large and are fitted with heavy duty ball bearings. The wheels are wood, artillery type, and they are shod with either 28 by 2½ inch solid clincher tires or 30 by 3½ inch pneumatic tires. The buyer has the option of which type will best serve his purpose.

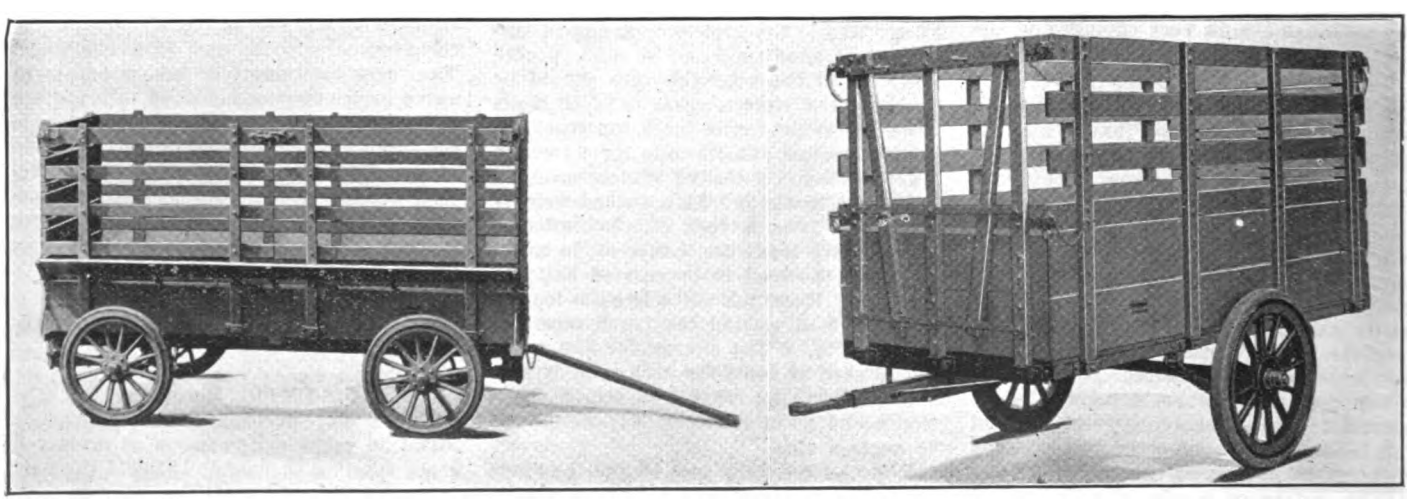
Spring Suspension a New Idea.

The frame is constructed from three-inch pressed steel channel section with wide webs and it is reinforced with corner gussets and there is a tubular tie rod amidships. The frame has a considerable degree of flexibility. The frame has heavy corner brackets, between which are members that form the sides for the swinging drawbars, and seated in each bracket is the large end of a slightly arced quarter-elliptic spring, that is retained by a saddle and pair of clips. These springs are made of graduated leaves and the main members are secured to brackets on the axles, this being an adaptation of cantilver spring design to trailer use.

As will be noted the relations of the axles are maintained by the springs, and a comparatively high degree of spring resiliency and efficiency is obtained with short springs. Claim is made that this construction combines maximum shock absorbing efficiency with extremely light weight, and the method of mounting insures perfect spring action regardless of the direction of movement of the vehicle. Through the degree of castor of the wheels the trailer will track perfectly with the towing vehicle and there is no weaving or swaying action because of side draft.

The frames are fitted with drawheads at either end and these are the Ohio design, the drawbars being fitted with buffer springs to absorb starting and stopping strains. The drawbars swing and are pivoted to frame cross members, the rear ends being connected to drag links that actuate the tie rod and the wheels of the forward set, unless there are two units in a train, when the rear wheels of the first unit and the front wheels of the second unit are also turned in ratio to the arm of movement of the towing vehicle.

The frame of the chassis carries a substantial deck mounted on bolsters and is adapted for either panel or rack sides, such as are provided for the unit previously described. The panel sides are fitted with flareboards and the rack stakes



Latest Ohio Units: At Left, Model 100B, Reversible, 1500-2000 Pounds Capacity; at Right, Model 61B, 1500-2000 Pounds Capacity. Both Are Fitted with Cattle Rack Bodies.

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are secured in pockets on the sides. The sides and ends of the rack are clamped to insure against stresses.

The standard body equipments are either panel or cattle rack. The model 61A semi-trailer is priced at $185 with panel rack body and $200 with cattle rack body. The model 100B trailer is sold for $350 with panel body and for $375 with cattle rack body.

HURLBURT TRUCK PRODUCTION CONTINUED.

With the sanction of the official merchandise creditors' committee, of which H. G. Banta is chairman, a contract has been made by the receiver of the Hurlburt Motor Truck Co., and the Harrisburg Manufacturing and Boiler Co., Harrisburg, Pa., by which the latter is authorized to manufacture 1200 Hurlburt trucks on payment of $260,000, with the privilege of manufacturing an additional 1200 trucks for a similar sum, within two years. William B. Hurlburt has resigned as receiver of the Hurlburt Motor Truck Co. and has been succeeded by Langdon P. Marvin, turning over to him $28,499.55, less certain obligations. The trucks built by the Harrisburg Manufacturing and Boiler Co. will be sold by Hurlburt Motors, Inc., a selling concern organized by Mr. Hurlburt, so manufacturer will not have to have a sales organization.

WALTER C. WHITE MADE LEGION OF HONOR CHEVALIER.

Walter C. White, vice president of the White Co., Cleveland, O., has been made a chevalier of the Legion of Honor of France, which is regarded as being the greatest honor that can be bestowed by the French Republic. It was conferred as an added recognition of the service rendered to France by the White company during the European war.

The First and Second Groupements of the Great Headquarters Reserve No. 1 of the French army, each of which operated more than 500 White trucks, had previously been awarded the Croix de Guerre with citation for distinguished service, and later another citation was issued in behalf of Reserve No. 1, which operated about 2500 White trucks.

BUYERS WANT ACE TRUCKS.

The American Motor Truck Co., Newark, O., of which Col. J. D. Potter is president, Capt. H. J. Vogler sales manager and Erwin Philips chief engineer, begun production Aug. 1, and orders were received before the first machine was completed. To house the administrative department a new concrete building was started which will be completed before the end of the month.

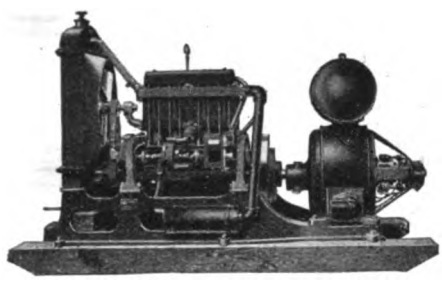
DETROIT TRAILER IN NEW PLANT.

The Detroit Trailer Co. is now occupying a new factory building at 27-37 Jos. Campau avenue, at Atwater street, Detroit, where it has greater manufacturing facilities and can considerably increase production.

MATTHEWS ISOLATED LIGHTING PLANTS IN SIX SIZES.

Electric energy is probably sold as economically as is possible by public service corporations and there may be a question whether or not the isolated plant is a good investment when current is obtainable at commercial prices. But there are thousands of instances where electric current is desirable, and even necessary because of safety, workmanship and perhaps other conditions. Shops, residences and public or semi-public buildings more or less remote from public service lines cannot utilize electric lighting save by incurring heavy construction expense, and for such service the Matthews Engineering Co., Sandusky, O., builds a series of unit plants that are driven by gasoline engines. These are constructed in six sizes, 300 watts, 1000 watts, 2000 watts, 5000 watts, 10,000 watts and 15,000 watts, in either 32 or 110 volt units.

These units are equipped with either one, two or four-cylinder gasoline engines that are designed especially for the work and are water cooled and



Matthews 5-6 KW Automatic Generating Unit, with Four-Cylinder Engine, Showing General Design of This Equipment.

standard construction throughout. These engines drive generators built by the General Electric Co., and the current is charged into Willard storage batteries, from which it is drawn as required for lighting or for operating machinery. Each outfit is automatic, that is, the engines will start when the batteries are approximately 15 per cent. discharged, or when the load is heavier than the batteries should carry, and they require no attention other than lubrication and replenishment of the fuel and water, aside from care that should be given batteries.

These outfits are assembled so that they are portable and they may be located conveniently with reference to the work to be done with them. Statement is made that no heavy load is ever drawn direct from the batteries, nor can the batteries become completely exhausted. The battery cannot be over charged or over discharged. The 1000 watt outfit, for instance, is equipped with a 3½ horsepower single cylinder, four-cycle, water cooled engine direct connected with a 1000 watt 32-40 volt generator, the battery being a 16 cell and counter cell 72 ampere-hour capacity. The model B plant includes a seven-horsepower, two-cylinder engine direct connected to a 110 volt generator, with a 16 cell battery and counter cell, having a capacity of 114 ampere-hours. The generator alone has capacity for 24 hours continuously of 100 20 watt lamps. The 300 watt outfit includes a single cylinder 2½ horsepower water cooled engine, a 32-40 volt generator, capacity 350 watts, with continuous load capacity of from 15 to 20 20 watt lamps.

The smaller outfits are especially suited for garages, service stations, repair shops and for work where small electric power machines are utilized.

MELHUISH RESIGNS FULTON PRESIDENCY.

William F. Melhuish, Jr., has resigned the presidency of the Fulton Motor Truck Co., Farmingdale, L. I., because of overwork, and has associated himself with a brokerage concern at 40 Wall street, New York City, which specializes in automotive and accessory securities, but will retain his holdings in the company, of which he is the largest stockholder.

Mr. Melhuish organized the Fulton company with very limited resources and directed its development. It has a large and well equipped plant and a production of between 2000 and 3000 trucks a year. Plans have been determined to enlarge the plant and extend the sales and advertising departments. The company is dividend-paying and well established in the industry. It builds a standardized type 1½ ton truck. Statement is made that to insure the policies that have been proven successful being continued the board of directors voted approval of the recommendations made by Mr. Melhuish when he retired.

LEWCHER WITH EISEMANN MAGNETO.

The Eisemann Magneto Corporation, Brooklyn, N. Y., has made Lieut. J. Lewcher the head of its accounting department. He served in the army, passing the Central Officers' Training School at Camp Lee, Va., and after being commissioned in the infantry was sent to Camp Upton, where he was battery supply officer until discharged. He was formerly a traveling auditor for the American Smelting and Refining Co., with office in New York City.

McCOLLUM DIRECTS TRAFFIC TRUCK ADVERTISING.

J. Albert McCollum, for a long period in charge of the automobile advertising department of the St. Louis, Mo., Republic, has been appointed advertising manager of the Traffic Motor Truck Co., St. Louis. G. Elmo Holke continues with the company as assistant advertising manager and will edit the company's magazine, "Horse Sense."

PICKETT WITH OHIO TRAILER CO.

Harris S. Pickett, who has joined the Ohio Trailer Co., Cleveland, O., as advertising manager, was formerly connected with the General Asbestos and Rubber Co., as advertising and assistant sales manager for several years, and is well known in the automotive industry.

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MUST PAY TAX ON SALES TO STATES

Washington, Aug. 2.—Almost marvelous in its uncertainty is the interpretation of the Treasury Department and the Department of Justice that advises it of the internal revenue tax law. It is seemingly truly legal, because every authority differs, but is agreed that the taxpayer ought to pay all he can be made to deliver.

The automotive industry and trade endeavored for several months to convince the commissioner of internal revenue that a truck chassis was the trade unit and not a part before modification was made that applied the tax of three per cent. to the chassis only and not to a chassis and body. There was developed in connection with this a retroactive application that greatly complicated the business transactions of the dealers in trucks who had made sales with the belief that the chassis were taxed three per cent.

By persistent activity the Treasury Department was induced to amend its decision and the supposition was that the subject had been so thoroughly reviewed that there was clear understanding.

But now the Treasury Department has issued another decision, based on an opinion of the attorney general, that all sales made to the government, to states and political sub-divisions are taxable instead of being exempted from taxation, and that these taxes are retroactive to Oct. 3, 1917, as applied to trucks and automobiles, and to Feb. 25, 1918, when applied to tires, tubes, accessories, parts, etc.

The decision was not made public until July 30. By it the taxes imposed by the present and the prior law are retroactive.

According to regulation 44, approved May 31, 1918, by the commissioner of internal revenue, the sales to states and political sub-divisions were not taxable; according to unofficial advice of the revenue bureau from February to May, 1919, the sales to the government and states would not be taxed; according to regulation 47, approved May 1, 1919, sales to the government were taxable, but sales to states and political sub-divisions were not taxable.

There is no way of determining how far-reaching this decision may be. As will be noted with reference to trucks and cars and motorcycles, it covers all sales to the government and to states and municipalities since Oct. 3, 1917, or approximately 22 months, and for accessories, parts, etc., since Feb. 25, 1918, or approximately 16 months.

The opinion by the attorney general was made July 7 and the decision was approved by Secretary of the Treasury Glass, July 22, but not made public until July 30.

The treasury decision, which is No. 2897, is as follows:

EXCISE TAXES.

Manufacturers, producers, importers and vendors are subject to excise taxes imposed upon them upon sales of taxable articles even when the sales are made to a state or political subdivision thereof, unless the taxing act specifically exempts them from tax upon such sales. Article 10 of regulations 47, and article 6 of regulations 48, are amended.

Treasury Department, Office of Commissioner of Internal Revenue, Washington, D. C.

To Collectors of Internal Revenue and Others Concerned:

Under an opinion of the attorney general, dated July 7, 1919, manufacturers, producers and importers are declared to be subject to the excise tax imposed by section 900 of the revenue act of 1918 upon sales made to a state or a political subdivision thereof except as provided in subdivision (10) of such section.

In accordance with the above opinion, manufacturers, producers and importers are subject to excise tax under section 600 of the revenue act of 1917 and section 900 of the revenue act of 1918 upon all sales of taxable articles made to states or political subdivisions thereof except where specifically exempt from tax upon such sales, as under subdivision (10) of section 900 of the revenue act of 1918. In addition to liability to tax under the above sections, manufacturers, producers, importers and vendors are held to be liable to tax upon all sales of taxable articles made to states or political subdivisions thereof under section 313 of the revenue act of 1917 and under sections 628, 902 and 905 of the revenue act of 1918; and lessors of positive motion picture films containing pictures ready for projection are subject to tax upon amounts received from the leasing of such films to states or political subdivisions thereof under section 906 of the revenue act of 1918. Where an excise tax is imposed directly upon the vendee as under sections 904 and 907 of the revenue act of 1918, sales to states or political subdivisions thereof are exempt from tax.

Article 10 of regulations 47 is amended to read as follows:

Article 10. Sales to the government or a state.—The tax applies to articles enumerated in section 900 when sold to the government. Where, however, the government supplies a manufacturer with all materials and parts, except a small portion furnished by the manufacturer under a contract stipulating that the manufacturer shall be guaranteed a certain profit, no tax is payable because the manufacturer does not sell the article. Articles manufactured in plants taken over and operated by the government are not subject to the tax. The tax also applies to the articles enumerated in this section, except to those enumerated under subdivision (10), when sold to a state or political subdivision thereof even though they are to be paid for entirely out of public moneys and are to be used in the carrying on of governmental operations.

Article 6 of regulations 48 is amended to read as follows:

Article 6. Sales to the United States or a state.—The tax applies to articles enumerated in sections 902 and 905 when sold to the United States. Such articles are also subject to tax when sold to a state or political subdivision thereof for use in carrying on its governmental operations.

Daniel C. Roper,
Commissioner of Internal Revenue.

Approved: July 22, 1919.
Carter Glass,
Secretary of the Treasury.

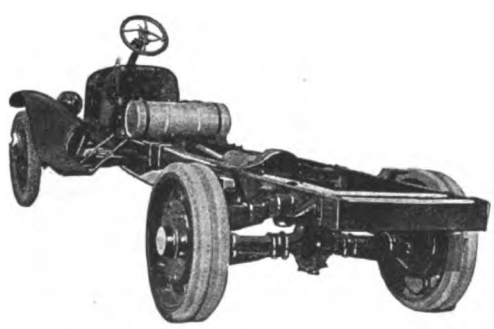
OLSON TWO-TON INTERNAL GEAR DRIVE TRUCK.

What is claimed to be the lowest priced two-ton truck is now produced by the Swedish Crucible Steel Co., which operates plants at Detroit and Windsor, Ont., under Olson patents. This is not a conversion unit, but it is a truck chassis in which a complete Ford power plant is installed and the wheels, axles, springs, frame and other components are of such size that an overload capacity of 50 per cent. in excess of the rating is guaranteed by the manufacturer.

The truck has a wheelbase of 142 inches and the frame is a size that will take a body 60 by 144 inches, or even larger. The rear axle is a patented internal gear driven type, which is claimed to have the largest bearings ever used for a truck having load capacity of 11 tons each. The rear wheels are steel disc construction and these are fitted with 32 by 3½ inch dual solid tires.

The frame is constructed of channel section steel five inches deep, with wide webs, and this is mounted on extra heavy side springs, 52 inches long and 2½ inches wide, having 14 leaves. The springs are highest grade and they are well bushed and fitted with dust proof oilers.

Claim is made that the truck has abundant power and speed and that it will serve practically the needs of all save those who have extremely heavy haulage. The chassis is priced at $1015 f. o. b. Detroit.



Olson Two-Ton Truck, Claimed to Be the Lowest Priced Unit of This Capacity Sold.

NEW FOUNDRY FOR HELGERSON CO.

The Helgerson Foundry Co., Green Bay, Wis., has been incorporated with an authorized capital stock of $100,000 to engage in the manufacture of steel, semi-steel and gray iron castings, specializing in automotive parts. It is the development of the Helgerson gray iron foundry at Green Bay, which will move into a new plant to be equipped with steel furnaces in addition to a cupola.

NEW TEXAN PRICES ANNOUNCED.

The Texas Motor Car Association, Fort Worth, Tex., has announced the prices for Texan passenger cars and trucks, these being $1250 for the two models of roadster and the touring car, and the prices being $1200 for the ¾-ton model, and $1425 for the 1½-ton chassis.

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STEWART MODEL 11 ¾-TON TRUCK

THE Stewart Motor Corporation, Buffalo, N. Y., has begun the commercial production of a new size truck that is designed as model 11, which is rated at 1500 pounds normal load capacity. The design has been carefully developed to meet the requirements of fast service and to obtain endurance and economy of operation and maintenance.

The machine is conventional in construction and follows standard practise. The principal units include LeRoi 2-C engines, equipped with Zenith carburetors, Eisemann high-tension magnetos, Dyneto electric starters, Eisemann generators and Willard storage batteries; Fedders radiators, Mechanics multiple dry plate clutches, Mechanics model MU selective sliding gear transmission gearsets, Clark model A internal gear driven rear axles, Parish frames, Detroit springs, C. A. S. steering gears and Wayne wheels.

Engine a Four-Cylinder LeRoi.

The engine is a four-cylinder, four-cycle, water cooled, vertical, L head type, having cylinder bore of 3⅛ inches and stroke of 4½ inches, which is rated by the S. A. E. formula at 15.62 horsepower, but which is claimed by the maker will develop 25 horsepower at maximum speed. The cylinders are cast en bloc with the water jacket integral and all moving parts are enclosed. The engine is cooled by a thermo-syphon circulation of water through a cast tank armored type radiator and by a 14-inch steel blade and driven by a flat belt from an extension of the water pump shaft.

The engine is lubricated by a combination forced feed and splash system, the oil being drawn from the reservoir by a plunger pump and forced to the main bearings and timing gearset, and distributed by splash to the cylinder and piston walls, the wristpins, the camshaft, the valve tappets and valves. The engine is equipped with a direct acting oil level gauge. The Zenith carburetor is fitted with a dash starting adjustment and a throttle controlled by a hand lever and a foot accelerator.

The ignition current is supplied by an Eisemann high-tension magneto with a fixed spark. The lighting current is produced by an Eisemann generator and charged into a Willard 80 ampere-hour battery. The Dyneto starter is fitted with a Bendix driving pinion. The dash and tail lamps are combination oil and electric and the head lamps are fitted with dimmers. The power plant is suspended in the chassis at three points.

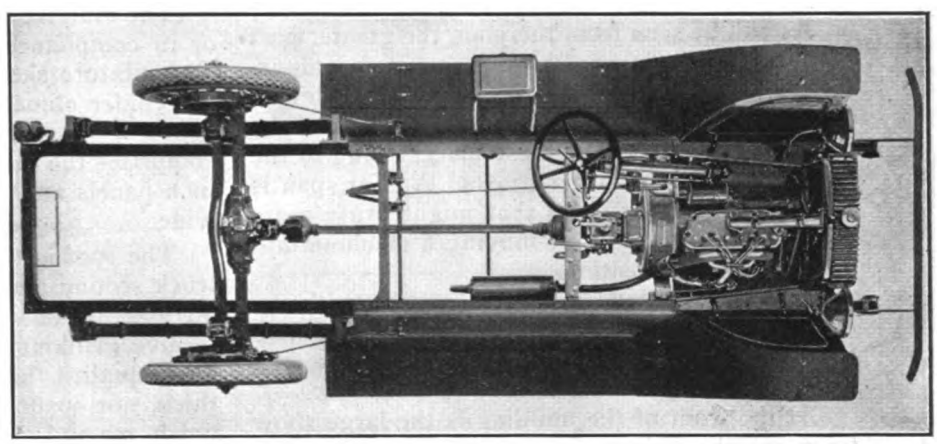
The Power Transmission System.

The engine is combined with the clutch and transmission gearset into a unit power plant. The clutch is constructed with steel plates faced with Raybestos fabric and is practically self-compensating and requires but little attention save lubrication at infrequent intervals. The transmission gearset has three forward speed ratios and reverse and all shafts and gears are high grade steel. The shafts are mounted on annular ball bearings.

The propeller shaft is a mechanical joint type, having two joints that are enclosed in oil-tight pressed steel tubing 1¾ inches diameter with 3/16 inch wall. The construction of the shaft is such that there is a ¾-inch plus and minus slip to compensate spring action. The shaft is coupled to the pinion shaft of a model A Clark internal gear driven rear axle, this having a solid axle that carries the load and a countershaft that drives the pinions that engage with the internal gears bolted inside the drums on the rear wheels. This axle is the latest production of the Clark Equipment Co., and it is equipped with very large roller bearings. The gear reduction is 6:1. The front axle is an I section steel drop forging 1½ by 2¼ inches, having heavy spindles that are fitted with unusually large taper roller bearings.

The Frame and Chassis Construction.

The frame is a pressed steel channel section 5/32 inch thick, four inches deep and with wide webs. It has three cross members that are strongly gusseted and reinforced. The frame is suspended on Detroit semi-elliptic springs, the front set being 38⅜ inches long and the rear set 50 inches long. The springs are fitted with full length rebound plates and with oilless bushings. The wheelbase is 110 inches and the tread 56 inches.



Stripped Chassis of the Stewart Model 11 Truck, Showing the Unit Power Plant, Transmission System and the Clark Model A Internal Gear Axle.

The wheels are wood, artillery type, with 12 spokes forward and 14 rear, that are shod with 32 by four-inch pneumatic tires, on demountable rims. The forward tires are plain tread and the rear tires non-skid. The steering gear is a heavy worm and gear type with springs in the drag link for absorbing road shocks. The steering column is located at the left side of the chassis. The control is by foot pedals for the clutch and service brake, a hand throttle and foot accelerator, and hand levers for shifting the gears and the emergency brake. The service brake is external contracting on 14-inch drums on the rear wheels, the shoes being Raybestos lined. The brake countershafts are fitted with oilless bushings. The emergency brake is external contracting and is mounted at the rear of the transmission gearset housing on a frame cross member. The brake drum is 7½ inches diameter and the shoe is lined with Raybestos.

The gasoline tank is under the driver's seat and is 10 gallons capacity. It is terne coated inside and outside to prevent rusting. The chassis and running gear, including the wheels, are painted red and the fenders and running boards are black enameled.

The standard equipment of the chassis includes a folding windshield, oil dash and tail lamps, one extra tire rim, tire irons, mechanical horn, tire repair outfit-full set of tools, front bumper and front and rear fenders and running boards. The chassis can be supplied with four types of standard bodies, stake platform, open express, covered express or panel enclosed.

DETROIT PRESSED STEEL CO. BUYS NEW PLANT.

The Detroit Pressed Steel Co. has purchased the property of the Detroit Shell Co. in Carlton avenue, Detroit, and has taken possession, intending to operate it in addition to its plant at 1800 Mt. Elliott avenue. The property includes 27 acres of land, an office building 35 by 50 feet, a one-story brick dry kiln 50 by 100 feet and a main building 316 by 500 feet. There is about 167,000 square feet of floor space area available. The works was built for the Springfield Body Co. about four years ago, and when the company failed its property was acquired by the Detroit Shell Co. to manufacture war munitions. The Detroit Pressed Steel Co. produce Disteel wheels.

RIDENOUR WITH NATIONAL CHAIN CO.

Announcement is made by the National Chain Co., with offices at 30 East 42nd street, New York City, that O. J. Ridenour, for four years general manager of the Star Expansion Bolt Co., and until recently secretary and assistant general manager of the Wright-Martin Aircraft Corporation, has associated himself with that concern as vice president and general manager.

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COMBINATION SERVICE STATION

A Concrete Fireproof Single Story Building with Exceptionally Large and Attractive Show Room and Ample Facilities for Storage.

IN THE layout accompanying is presented an idea that may be incorporated in a building if the locality is suitable, and it should produce good results for the owner. The problem of housing both trucks and passenger cars is never determined for any locality, so that the natural tendency is to erect buildings that will meet the requirements of vehicle owners. Of course, care, judgment and thought must be exercised in deciding just what type of construction is to be followed and the relation, or arrangement of the units of which the edifice is composed.

Compactness of the layout of the different departments and their relative positions to each other not only provides large storage area, but also affords the maximum of efficiency, making possible better workmanship with contentment prevailing among those who must have to do with the operation of these departments. The sketch shows a structure one story high, covering an area of 100 by 140 feet, totaling 14,000 square feet in all.

As will be seen from the plan, the greater part of this space is devoted to storage; in fact, four-fifths of it. Yet there is ample room to devote to the show room, repair departments, etc. The truck section has the greatest space, owing to the size of some of the larger trucks. A clear span is shown, eliminating posts that might cause more or less care in placing or moving a machine into or from a given position.

Entrance is made from two streets, with the car entrance and show room fronting on the main thoroughfare, while the truck entrance is located in the side street or lane.

At the front of the building is the large show room, which as planned is 80 feet long and 33 feet wide, having two entrances from the street and three from the garage, which is designed to make possible an unusually complete show of cars and trucks. The room may be made extremely attractive by treatment of the walls with simple but impressive color schemes and decorations. The floor can be tile, with tile inlays or borders, in whatever design might be approved, with white cement mortar joints for dark faced tile and black cement mortar for light tile. The wall panels could be plaster with battens or of wood. The ceiling could be beamed and columns and pilasters used. The walls could be hard plaster or a rough sand finish. The color treatment would be to individual taste. The office adjoins the show room with entrance to it and the garage, and off the office is the women's toilet. The men's toilet is off the show room.

At the rear of the garage proper is a machine shop, a repair section, an oil and stock room, a wash stand, a toilet and wash room. A stairway leads from the toilet and wash room to a boiler room, situated underneath the machine shop. The space devoted to this need not be any larger than required to house a boiler of ample capacity, with storage for at least 10 tons of coal.

The machine shop is about 20 by 25 feet, lighted by a large skylight as shown, and should be fully equipped to handle work of any nature. The repair section is in the open, ample room being afforded for all sizes of cars and trucks. Work benches are along the walls of this section, sufficient in size to meet demands. The lighting is by a huge skylight. The toilet with wash room, combined as shown, is sufficient in size for the number of employees who would be engaged in a plant of this size.

Brick, concrete and steel are the elements that have been incorporated into this structure. Its nature is one of those called fireproof, having little or no combustible material in it.

The foundation is of concrete, 16 inches thick, or in compliance with the laws of the locality. The mixture should be fairly good, especially in the colder climates, so that suggested is as follows: 1-3-5. An extra good one is 1-2-4. Brick comprises the main walls throughout, having 12-inch panels and 16-inch piers, at least three feet wide.

The roof is supported by steel trusses at the truck section and I beams in the remainder, having steel purlins with wood cushions or plates to receive planking of roof. Plank should be of a good quality, hard pine, at least three inches thick, not spanning over 10-foot lengths. As a finish, tar and gravel should be applied.

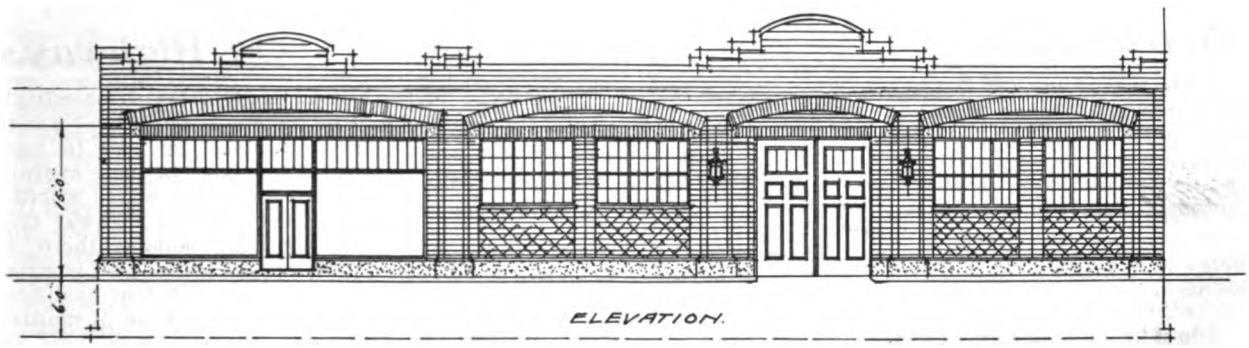
The floor should have a good granolithic finish, one inch thick on at least five inches of rough concrete with a cinder bed. Drains should be placed as shown, ample to insure dryness at all times.

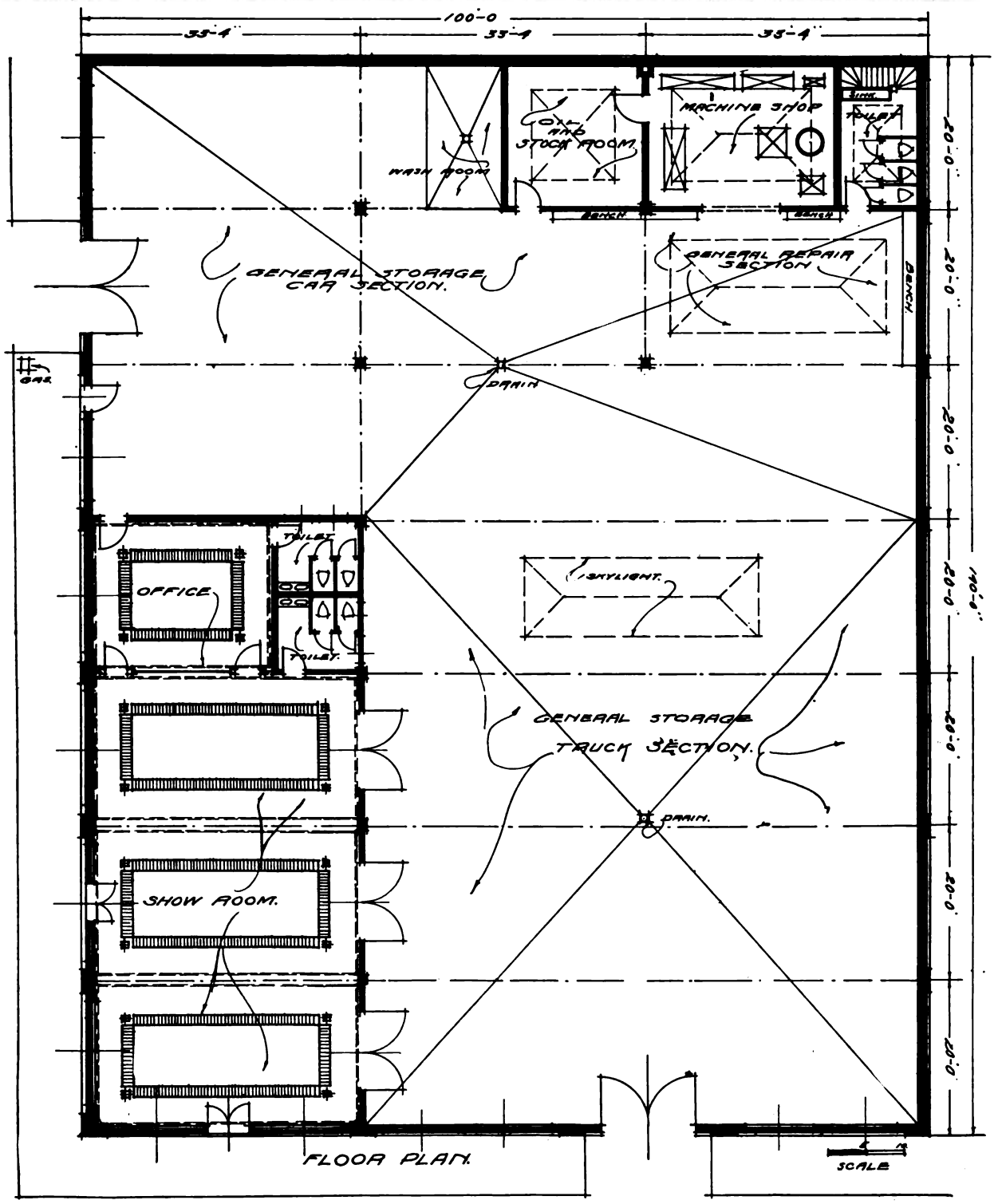
Windows are of steel sash type with wired glass. Doors are of wood or metal covered if law requires. Plumbing should be of a good standard make, as this will insure perfect satisfaction at all times.

Heating is by steam with wall radiation, this proving the most satisfactory method for this type of work. The gas pump is located on the street in a position convenient to all, enabling the handling of transient trade at all times.

The approximate cost of a structure of this type would range from $15,000 to $18,000. Any further information desired may be had upon application to the Architectural Department of this publication.

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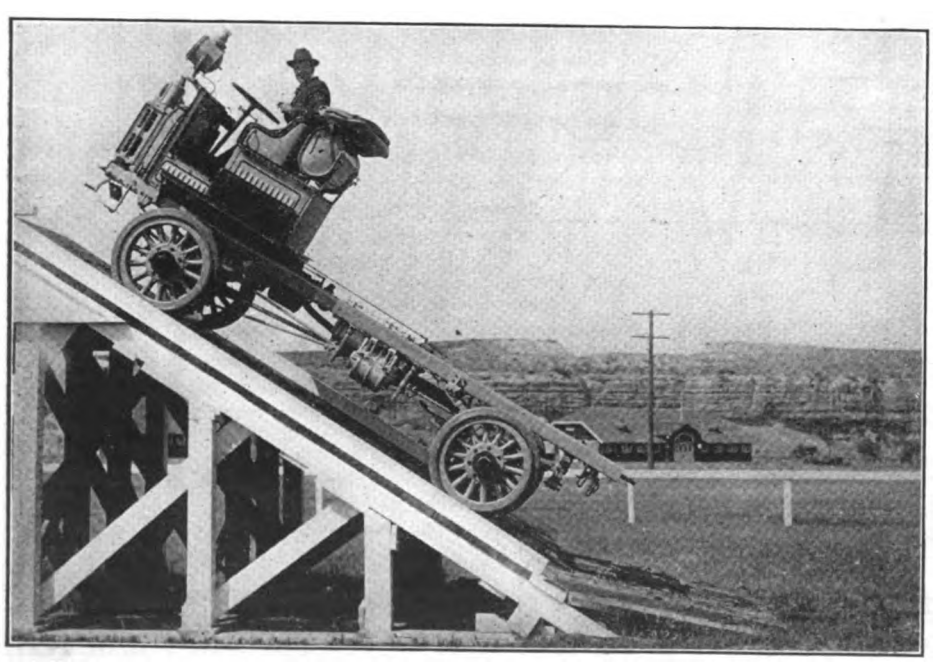
F-W-D Truck Ascends To Platform Up 66.6% Grade

A remarkable test of an F-W-D truck was recently made at Billings, Mont., by H. A. Lewis, which is claimed to be the first time that a truck has been driven on so steep a gradient with control equal to what might be realized on a level surface.

At Billings is a platform of wood 18 feet long and 12 feet above the ground, with inclines 217⅝ inches long. The platform is heavily built and Mr. Lewis decided to attempt to ascend and to descend from the platform with the truck. Mr. Lewis is an expert driver of trucks and tractors and demonstrated different makes of tractors, including a tracklaying type, at one world's fair. He states that ascending an incline of 38 degrees with a tractor was regarded as a "stunt" that might be classed as spectacular.

According to Mr. Lewis numerous attempts had been made to climb to the platform with rear-wheel driven trucks, but none could be driven on to the incline so that the rear wheels were actually on the slope. One tracklaying tractor climbed the grade, but when stopped on it could not be started.

A series of photographs made shows the F-W-D truck stopped in four different positions on the incline, from which starts were made, and claim is made that the engine did not labor during the trial. While stopped the truck was held with the service brake without a wheel slipping, and the emergency brake was not used. Two other types of four-wheel drive trucks had attempted to stop and start on the incline without success. In Mr. Lewis' opinion the truck would have made the ascent with a three-ton load. The angle of the slope was found to be 33 degrees and 41 minutes, or 66 2/3 per cent. grade.



F-W-D Truck Stopped While Climbing a 66.6 Per Cent. Grade to a Platform 12 Feet Above Ground, at Billings, Mont.

ACME TRUCK FOREIGN DISTRIBUTORS.

The Aktieselkabet Autocar Co., Copenhagen, Denmark, has made contract with the Acme Motor Truck Co., Cadillac, Mich., to distribute Acme trucks in Denmark, Norway, Sweden and Finland, this connection being made through the All Trading Corporation, Chicago, the Acme export agent. Frantz Nahammer is president of the Danish concern and has already given several orders.

The Acme company is now represented in Mexico by Gmo. Verduzco & Co. at Avenida Juarez, and statement is made that despite the unsettled conditions in that country there is a prospect for excellent business there.

MOTOR AND ACCESSORY MEETING.

The Motor and Accessory Manufacturers' Association will hold an important meeting at the Hotel Lafayette, Buffalo, N. Y., Sept. 11-12. The credit managers of the association will meet in convention but the executives of member companies are urged to attend to discuss subjects of direct and vital importance to business in general and the automotive industry in particular. The names of the speakers and other details of the meeting will be announced shortly. Statement is made that the intention is to make the gathering a thought stimulating get-together convention.

BIG ORDER BY SINGLE DEALER.

Statement is made by the Traffic Motor Truck Co., St. Louis, Mo., that unusually large business has been developed by the Shields-Livengood Motor Co., Seattle, Wash. Sales Manager W. M. Hartford of that company originally ordered 100 trucks. Several weeks later he ordered 50 more and tripled his shipping schedule, and still later ordered 50 more trucks, all of which he expected to dispose of by Sept. 1.

Truck Impact Tests To Learn Effect On Highways

Road engineering is seemingly about to be the subject of some research work that promises to lead to results, although the value of these cannot be predicted. Until the entire world became committed to power highway transportation and road building there was general supposition that civil engineering as practised was sufficient qualification for general administration of municipal and state departments. Now there is realization that there is need of much scientific investigation if roads that will endure under heavy traffic are to be built and maintained economically.

Probably a great deal of interesting data has been obtained by the English Board of Trade, which developed a laboratory for experimental work and for which special equipment was built that was intended to establish the effect of wear on differing surfaces. This, however, is not available. Obviously, the American road builders must go back to first principles and by experiment and processes of elimination, determine what construction will best serve under widely varying conditions and traffic.

The Bureau of Public Roads of the Department of Agriculture has undertaken a series of impact tests which are expected to establish in what degree power truck traffic wears highways. These will continue over a considerable period of time. Statement is made that preliminary road impact tests made by the Bureau of Public Roads indicate that the impact pressure exerted by a power truck in motion is about six times that of a truck at rest. The tests were conducted with a class B government truck loaded up to five tons, running up to 15 miles an hour and allowed to fall from varying heights on the impact measuring apparatus. These tests will be continued with trucks ranging from the lightest weight to the heaviest until complete data is obtained.

The question of the relative impact exerted by trucks with solid versus giant pneumatic tires will also be investigated. Definite arrangements have been made to secure a Packard three-ton truck with requisite tire equipment for these tests and a loan of other units would be welcomed by the government officials.

Tests to show the resistance of various types of road surface such as concrete, asphalt, etc., are soon to be undertaken. About 50 road slabs built of these materials will be broken under the impact of a machine which approximates the impact effect delivered by motor trucks.

By measuring the amount of impact actually delivered by the motor trucks to roads and by proceeding further in testing the destruction of actual road slabs subjected to impact, government officials hope to obtain very definite information which will permit them to design a high type pavement or high types that will resist definite traffic conditions.

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NEW TOWER 3½-TON HEAVY DUTY TRUCK

SERVICE experience with its two-ton unit justifies the adoption of the same design by the Tower Motor Truck Co., Greenville, Mich., for the 3½-ton machine that is now in production with but one slight change in the chassis frame. The Tower company developed its first machine with unusual care and the experimental work was extended over a long period.

The original design was created to obtain great endurance and the details of assembling were developed after careful study of the construction units, for what may be termed "balance" was sought. The principal components determined included Continental Red Seal engines, equipped with Bosch magnetos, Stromberg carburetors and Pierce governors; Fuller dry disc clutches and selective sliding gear transmission gearsets, Spicer universal joints, Timken front and rear axles and Detroit Steel Products springs.

These construction units are known to the industry as being the products of specialists and are recognized as having quality, but the belief was that quite as much depended upon the manner of assembly of the components, and simplification and accessibility were regarded as important factors with discriminating buyers.

Chassis Lubricated by Heavy Grease.

Statement is made that the design was developed for work on country roads and for this reason the factors of safety of all parts were made exceptionally large. There was unusual attention directed to the lubrication of all moving contacting parts. All parts in frictional contact are extremely large and all of these points of contact, 49 in all, are lubricated by heavy grease that is forced to them by a grease compressor that ordinarily will develop in excess of 200 pounds pressure, and can exert 500 pounds pressure if this compression is necessary.

Instead of the usual oil and grease cups that are filled without pressure, all parts lubricated are fitted with heavy steel nipples fitted with ball checks, and on these nipples the flexible metallic tube of the compressor is locked. The compressor is a capped metal cylinder with a screw operated piston that is actuated by hand. The tube of the compressor can be connected and disconnected instantly and claim is made that the chassis can be greased thoroughly in 15 minutes. The company maintains that this system of lubrication is absolutely dependable, that the greasing is positive with reference to filling the bearings and the leads to them, that there are no threads to wear and no removable parts that may be lost, that water or dust cannot reach the contacting parts, and given the necessary attention the wear will be extremely small.

Engine a Continental Type E-4.

The engine is a Continental type E-4, designed for heavy truck work, a four-cylinder, four-cycle, water cooled, L head unit with the cylinders cast in pairs. The cylinder bore is 4½ inches and the stroke 5½ inches, the engine having a rating of 32.20 by the S. A. E. formula. The builder claims that it will develop 45 horsepower at 1500 revolutions a minute.

The engine is combined with a clutch and transmission gearset into a unit power plant that is mounted at three points in the chassis frame—by a trunnion carried on a frame cross member and by a ring assembled with the bell housing of the flywheel having arms that are bolted to the frame side members. The cylinder units are cast with the water jackets integral with the jacket heads open. The head plates are very large and the outlet manifold is a casting that is formed to have a movement of the water over the tops of the combustion chambers. The castings have heavy base flanges and are webbed under the valve pockets to seat plates that enclose the valves.

Care in Engine Construction.

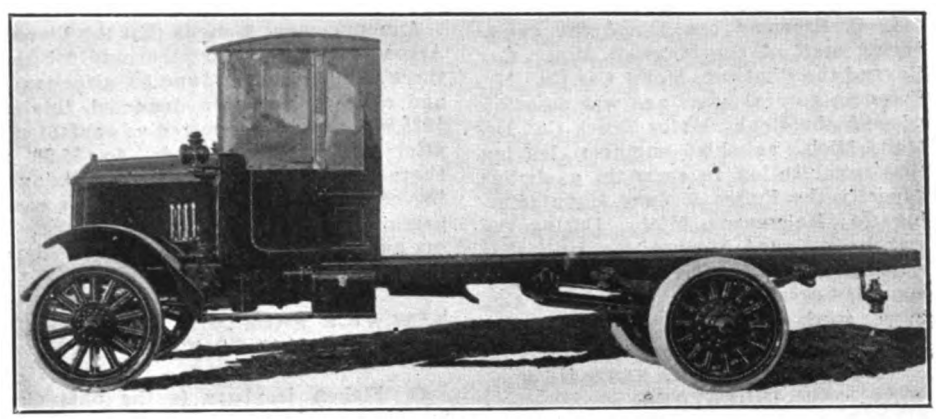
The design of the units is such that the water chambers can be thoroughly cleaned, insuring free and rapid circulation of the water, this making for efficient cooling and lubrication. The cylinders and pistons are cast from a high grade of gray iron and the cylinder jackets are tested by water pressure before machine work is begun. After rough machining the cylinders are aged and after grinding they are again tested. Much care is taken to insure perfect work. The pistons are turned for three diagonal split rings and are grooved to collect and distribute the lubricant.

The crankcase is cast from aluminum in two sections, both of which have forward and rear extensions to house the timing gearset and the flywheel. The upper section is divided by a transverse vertical web that carries the center main bearing. The lower section is the oil reservoir and the base of the crank chamber. The crankshaft is a three-journal type with the flywheel flange and flanges at either side of the rear journal, to take end thrust, forged integral. The camshaft is a three-journal construction with the cams forged integral. The connecting rods are I section drop forgings, heat treated. The main and crankpin bearings are nickel babbitt, mounted in bronze cages and fitted with shims, and the camshaft bearings are nickel babbitt. The wristpin bushings are phosphor bronze. The timing gearset gears are large and have wide faces that are helically cut to operate noiselessly.

Engine Cooling and Lubrication.

The engine is cooled by a circulation of water through the cylinder jackets and a large radiator with cast top and bottom tanks, the top tank finned to promote radiation, having a honeycomb cooling section, forced by a centrifugal pump driven from the timing gearset by an outside shaft. The radiator is cooled by a four-bladed fan mounted on an adjustable bracket on an annular ball bearing that is driven by a flat belt from a forward extension of the water pump shaft. As the radiator is cast in four pieces and is flanged and assembled with bolts, it may easily be disassembled for cleaning or repairing.

The fuel is supplied through a Stromberg carburetor from a tank under the driver's seat, and the ignition current source is a Bosch magneto. The engine is equipped with a Pierce governor driven from the transmission gearset by which the speed of the truck is governed independently of the engine speed.



Side View of the New Tower 3½-Ton Truck Chassis with the Complete Cab with Curtains Drawn, but Without Running Boards.

The Power Transmission System.

The clutch is a Fuller multiple dry disc type that is housed and requires practically no attention and is self-compensating. Lubrication of the shifting collar is necessary only at intervals. The transmission gearset is a Fuller selective sliding gear design, having four forward speed ratios and reverse, the shafts being mounted on annular ball bearings. The shafts and gears are large and as they operate in a bath of oil they are extremely enduring.

The driving shaft is a tubular type in two sections that is equipped with three Spicer universal joints. The rear end of the forward section is carried in an SKF self-aligning ball bearing mounted in a cross frame. The shaft is coupled to the worm shaft of the Timken full-floating type rear axle, the worm shaft, differential gearset and the driving shafts being mounted on Timken roller bearings that are adjustable for wear. The differential gearset and the worm

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shaft and worm wheel are lubricated by a bath of oil. The front axle is a Timken drop forged I section with Timken bearings for the wheel spindles and the steering pivot heads and the knuckles are extremely heavy.

Details of Chassis Construction.

The frame is built of alloy steel channel section, the side members being tapered at the ends, that is seven inches depth with webs four inches wide. There are four frame cross members, the three rear members being strongly gusseted, that are hot riveted, and the rigidity is increased by the reinforcement of the engine support arms, the brake shafts and the tie rod between the shackles of the rear ends of the rear springs.

The frame is suspended on semi-elliptic springs, the front set 44 inches long and three inches wide, with 11 leaves, and the rear set is 56 inches long and 3½ inches wide with 16 leaves. The main leaves of the rear springs are silico-manganese steel and the other leaves are carbon steel. Each leaf is slightly concave its entire length and the end of each leaf is formed to serve as a grease cup, so that the channels between the leaves can be lubricated with these cups. The spring eyes are bushed and the spring and shackle bolts are hardened and ground and the bolts are well lubricated. The relation of the rear axle is maintained by I section radius rods that are pivoted to the spring seats of the axle and to heavy hangers on the frame so as to compensate for spring action. These take the driving and braking stresses. The radius rods are fitted with steel bushings and are adjustable at the front pivots.

The Chassis Control Members.

The steering gear is a Ross worm and nut fore and aft type of heavy construction, that is easily adjustable, and which is located at the left side. The control is by the usual foot pedals for the clutch and service brake and hand levers for the ignition current and throttle on the steering wheel and hand levers for the emergency brake and shifting the gear ratios at the center of the footboard. The brakes are the Timken duplex internal expanding, operating within 21-inch drums on the rear wheels, that are equipped with automatic equalizing devices.

The wheelbase of the chassis is 165 inches and the wheels are wood, artillery type, equipped with Goodrich De Luxe solid tires, 36 by five inches front and 36 by five inches, dual, rear. The tread is 66½ inches forward and 65¼ inches rear.

The loading space back of the driver's seat without overhanging the frame is 162 inches, which will take a body of unusual length. The dash is a Roman type and the driver's cab is a standing construction, with a windshield front and substantial side stanchions and swinging doors. The sides of the cab are equipped with curtains that completely enclose and protect the driver. The standard equipment includes the driver's seat, cab, two-piece windshield, curtains, fenders, running boards, oil dash and tail lamps, hand horn, tool box and set of tools that will fit all the nuts and screws of the chassis. The price is $4100 f. o. b. Greenville.

FREEMAN NOW WITH CHALMERS-MAXWELL.

L. C. Freeman has joined the engineering staff of the Maxwell Motor Car Co. and the Chalmers Motor Car Co. Mr. Freeman several years ago was associated with the Denby Motor Truck Co., Detroit, Mich., as chief engineer, leaving that organization to serve in a similar capacity the Fuller & Sons Manufacturing Co., Kalamazoo, Mich. During the war he resigned his position with that concern to join George W. Dunham, former vice president of the Chalmers Co., in war work.

U. S. TRUCK CO. ELECTS NEW DIRECTORS.

The United States Motor Truck Co., Cincinnati, O., declared a seven per cent. dividend on the common stock and the regular quarterly 1¼ per cent. dividend on the preferred stock at its annual meeting. The old officers were re-elected, while the directorate was increased by the addition of R. J. Firestone, E. C. Shumard and W. D. Totten.

MONTGOMERY JOINS GENERAL MOTORS TRUCK CO.

S. R. Montgomery, who has had considerable experience in truck selling, having sold GMC trucks and Knox tractors in Arizona, has joined the sales department of the General Motors Truck Co. During the war Montgomery served with the Motor Transport Corps.

TRACTORS NEEDED IN HAWAII.

As a large sugar producing country the Hawaiian Islands offer great possibilities for tractors. According to a report from a Honolulu concern, 20 to 40 horsepower creeper type machines are needed immediately.

ANNOUNCEMENT OF PIERCE EARNINGS.

Announcement is made that the Pierce-Arrow Motor Car Co.'s surplus for the three months ending June 30, after taxes and charges had been deducted, totaled $625,804, which is reported as equivalent, after preferred dividends, to $1.30 a share on the 250,000 shares of outstanding common stock of no par. This compares with $1.47 a share in the preceding quarter and $914,029, or $2.85 a share in the June, 1918, quarter.

NEW VICE PRESIDENT FOR REPUBLIC TRUCK.

C. Fisher Hepburn is the new vice president and general manager of the Republic Motor Truck Co., and has already assumed his duties. Frank W. Ruggles, president of the company, it is stated, will remain active, but expects to devote his time very largely to development work in connection with interests of the company.

BROWN-LIPE-CHAPIN CO. PLAN EXPANSION.

Plans for the erection of two additions to its plants are being perfected by the Brown-Lipe-Chapin Co., Syracuse, N. Y. One building will be 70 by 78 feet, five stories high, and the second will be two stories high and measure approximately 50 by 50 feet. Work will be started immediately and is expected to cost about $200,000.

ROAD BUILDERS TO MEET IN LOUISVILLE.

The ninth American good roads congress, under the auspices of the American Road Builders' Association, will be held in Louisville, Ky., the second week of February. The 11th national good roads show will also be held in connection with the convention.

EISEMANN CORPORATION GETS CHARTER.

For the purpose of carrying on the business of the Eisemann Magneto Co., Brooklyn, N. Y., the Eisemann Magneto Corporation has been chartered by the state department. The corporation will start business with $1,650,000, and is authorized to issue 30,000 shares of stock without par value, and 15,000 shares of seven per cent. cumulative preferred of par value of $100 each. It will be recalled that the Eisemann Magneto Co. was sold on Feb. 11 by the Alien Property Custodian to G. E. Mathiers of Seymour, Conn. The directors of the new organization include Samuel C. Worthen, Raymond B. Jones and Jacob S. Farlee.

GMC ADDS TO SAMSON TRACTOR PLANT.

The General Motors Corporation of Janesville, Wis., has purchased 63 acres adjoining its present holdings of nearly 200 acres, upon which is situated the new Samson tractor works. The land will be used for future expansion. The third and fourth units of the Samson plant will be put under way within a week or 10 days.

MINNEAPOLIS STEEL AND MACHINERY CO. ISSUES NEW STOCK.

The Minneapolis Steel and Machinery Co., Mineapolis, has announced a new issue of seven per cent. cumulative preferred stock totaling $2,000,000. This stock is now being offered for sale.

CANADIAN TIRE CO. EXPANDS.

The Canadian Consolidated Rubber Co. Montreal, has decided to spend immediately $1,000,000 on its tire plant for the purpose of substantially increasing the output.

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TRUCK TIRE MEN GOOD ADVISORS

TRUCK owners and drivers rarely realize that the cost of tires is generally the largest single item of expense of power truck operation, and for this reason they do not give to tire care the attention that the importance of this cost should impel.

Systematic inspection of tires, preferably twice a day, before the machine is taken out in the morning and when it is returned to the garage at night, will do much to minimize expense, provided that when any form of damage or deterioration is noted it is repaired immediately.

The driver who wants to conserve the tires of his machine can, if the shoes are pneumatic, note the condition of inflation a number of times a day by simply walking around the truck and observing the area of each tire in contact with the ground. If inflation is necessary a few strokes of a pump is a great protection. Many drivers, however, do not believe they should do tire inflating and will drive considerable distances, no matter what the wear on the shoe or the cost to the owner, to avoid this work.

Many owners believe that a tire should be used so long as it will remain on the rim, no matter how thin it may be, losing sight of the fact that good resiliency is necessary to protect the mechanism of the machine. When a tire will no longer absorb the road shocks and these are communicated direct to the chassis, the tire should be replaced, but this factor is not often given consideration.

Tire Service Men Good Advisors.

Those who sell tires or operate tire service stations, understand the possibilities for protecting and economizing them, and as a rule they are willing to advise owners and drivers. Naturally enough they will observe the condition of tires on vehicles brought to their shops or stations and can tell at a glance what could be practically done to obtain longer and better tire service.

The object of installing demountable solid tires on trucks was to facilitate tire changes in the event of damage, but with rims that could be easily removed and replaced few owners would have a spare tire available. Instead they would prefer to drive miles to have a tire changed, either because they did not care to do the work or to invest the money in spare tires. Perhaps both of these factors had weight in forming their policies.

Today the solid tires used on trucks are generally a pressed on type, because these have been found to give the best satisfaction as compared with the demountable types, and few owners have equipment for removing or installing them on wheels.

Are Truck Tire Specialists.

Very high pressure, which can only be obtained with a hydraulic press, is necessary to remove and install tires, and tire presses that have pressure capacities from 150 to 400 tons are included in the equipment of practically all tire service stations. These service stations do all kinds of tire repairing, but specialize handling truck tires.

The tire expert will note almost at a glance a condition that will cause excessive wear or damage. He can advise what changes might be made advantageously. He will note the condition of the axles and wheel spindles with reference to wheel alignment, which is extremely important.

If a wheel bearing is worn or an axle spindle bent the wheel will not revolve in its true plane, but will vary in ratio to the wear or the deformation and there will be a grinding contact with the ground that will wear the tire very rapidly as compared with a wheel in truth. Not infrequently wheels will be as much as an inch out of truth and rather than take the time of the truck and incur the expense of the restoration the owner will let the tire wear.

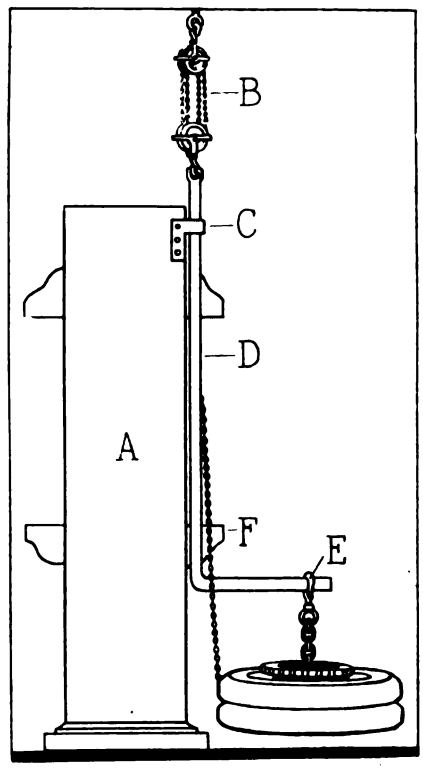


Diagram of Hoisting Rig at Mathey Bros.' Shop: A, Tire Press; B, Chain Hoist; C, Guide on Press Frame; D, Steel Shaft Bent at Right Angle; E, Chain Sling for Lifting Wheels; F, Tire Press Table.

Drivers Often Shirk Responsibility.

Or perhaps the driver will not inform the owner of a condition existing because he believes that he will be held responsible and he is apprehensive of the consequences. Anything that is expense to the owner means at least criticism of the driver.

But when the driver or the owner goes to a tire service station he wants to be served immediately. Time is valuable and no matter how much work is to be done in the station enforced delay is believed to be a condition for which the manager of the station is entirely responsible.

The tire station must be well organized. It must have office employees who will see that orders are hurried from the stock room to the shop and the men who handle the tires must be active and make every move productive. Some tire service stations will grease all wheels when a tire is changed, and statement is made by experienced tire men that as a rule truck wheels are sadly in need of lubricant. This, of course, is sheer negligence, but the owners or the drivers do not take the time necessary to inspect them.

Other Work Than Tire Attention.

Very frequently the wheels are not in alignment, due to bent spindles or worn bearings, and restoration cannot be made quickly. Straightening a bent spindle is a work for an expert metal worker because practically all steering knuckles are heat treated and heating to straighten a spindle may seriously affect the strength unless it is done by a man who is experienced in treatment of metals. Replacement of bearings is not a work of consequence provided the bearing can be obtained, for with rare exceptions the bearing seats are to standard dimensions and no fitting is required.

Handling tires in a shop can only be done with good equipment if economy of time and labor is a factor. The wheels of trucks will weigh up to 1500 pounds and these must be taken from and put on to the axles, and they must be lifted to and removed from the tire press. Chain hoists are generally used to raise and lower tires, and with these two men are generally needed to handle heavy wheels.

Simple Rig for Tire Press.

In the shops of Mathey Bros., in Boston, New York City and Providence, where tires are handled in large numbers, each press is equipped with a rig with which one man can hoist or lower or place any wheel or tire, no matter what the weight, quickly and easily. Statement is made that a forward wheel has been removed from a truck, the old tire pressed off and a new tire pressed on, and the wheel remounted on the axle in seven minutes, and that any rear wheel can be taken off, a new tire installed and replaced on the truck in 45 minutes.

Directly above the side member of a press frame is hung a chain hoist, the only requirement being that there shall be sufficient height for the rig. On the edge of the press frame are bolted one or two guides that may be U shape, the ends of the side members of the guides being drilled for two or three heavy bolts. The width of the guides may be from two to four inches. The U should have 2¼ inches clearance inside.

Piece of Shaft and Few Fittings.

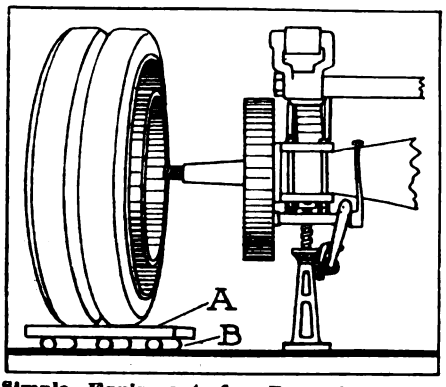
A piece of two-inch steel shafting, approximately the same length as the height of the press frame, should have one end bent at right angle to form an arm that will extend four to six inches beyond the center of the press table when the long end of the shaft is parallel with the edge of the press frame. The ends of the shaft should be drilled with half-inch holes in which should be heavy welded rings that will take the

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hook of the chain hoist and the hooks of a short chin sling.

The edge of the press frame should be drilled for the bolts of the guides at such heights that the shaft can be raised so that the arm, which is the lower end, the short chain sling and the wheel, will swing clear of the press table, and the shaft can be lowered so that the wheel can be placed on the floor. The chain hoist ring at the upper end of the shaft should clear the upper guide. With this rig, which is illustrated by diagram, one man can do practically any work with the largest sized wheel. The shaft will slide in the guides freely and it may be swung the greater part of a circle. It can be positioned wherever desired with reference to the table.

A wheel can be placed on the floor near the press so that a chain sling through the center can be carried to the ring in the end of the shaft arm. With the hoist the shaft can be drawn to such height that the wheel will clear the press table and press bands, when these are used, and then swung to position the



Simple Equipment for Removing Truck Wheels with Little Labor: A, Piece of Plank; B, Pipe or Rod Rolls.

wheel on the bands. Tires can be handled with the same equipment, and when the work has been completed the wheel can be placed on the floor as quickly and conveniently.

The rig may cost from $15 to $20, but this will practically save the wage of one man, will insure against all danger that might impend when lowering and swinging a wheel with an ordinary chain hoist, and greatly lessen the work for the man making the tire changes.

Quick Removing Wheels from Axles.

Removing the wheels from the axles and spindles is another work that can be expedited with the simplest equipment, yet two men are often needed to do this and the labor is heavy. When the wheel has been jacked a short piece of hard wood board or plank and three short pieces of iron pipe or rod should be shoved under it, the pipe or rod at right angle to the axle. The board should be 18 inches long and six inches wide, and the pipe or rod may be from six inches to a foot long.

With the wheel resting on the board it may be drawn off the axle, and then run off the board and placed wherever wanted. The same equipment will serve on even rough ground by using two pieces of board with the pipe or rod rolls between them, and jacking the wheel higher. When replacing wheels the boards and rolls are used in reverse of the removal. With the boards and rolls, which cost practically nothing, one man can handle a wheel as well as two.

NEW TYPE WINTHER TRUCKS IN PROSPECT.

The Winther Motor Truck Co., Milwaukee, Wis., which has increased its capital stock by $1,000,000, is bringing out several new and unique types of trucks, one being a special self-contained unit designed especially for telephone and telegraph companies. The machine is equipped with a large boring device resembling an auger, which digs post holes in 10 to 20 minutes, a job which ordinarily requires four hours time by hand. While no official announcement has been made, it comes from authoritative sources that the company will also soon market a "farm special" truck of the quadruple drive type that is said to combine advantages of the farm tractor with those of a truck.

AUTOCAR CO. INCREASES CAPITAL TO $10,000,000.

Stockholders of the Autocar Co., Ardmore, Pa., have approved an increase in capital stock from $2,000,000 to $10,000,000. The present shareholders will be given opportunity of subscribing to the new issue up to 50 per cent. of their present holdings. Rumors that the company would enter a consolidation have been denied.

FIRESTONE TO INCREASE CAPITAL FIVE TIMES.

Stockholders of the Firestone Tire and Rubber Co., Akron, O., have been asked to vote on an increase in capitalization from $15,000,000 to $75,000,000, of which two-thirds is to be preferred and one-third common stock. Ten million in preferred will be sold at once to enlarge the plant the officials state.

NEW BUILDING FOR MILWAUKEE STAMPING CO.

The Milwaukee Stamping Co., Milwaukee, Wis., has broken ground for a three-story manufacturing addition, 80 by 140 feet, which will increase the capacity of its main works at 64th and Pullen avenue, in West Allis, about 75 per cent. The additional facilities will be available about Oct. 1.

NEW FORD MANAGER FOR COPENHAGEN.

James J. Harrington, manager of the New England branch of the Ford Motor Co., has been made manager of the branch at Copenhagen, Denmark. R. F. Jones, manager of the Washington branch, has been sent to Boston to succeed Mr. Harrington.

SPICER MANUFACTURING CO. ABSORBS SALISBURY AXLE.

Stockholders of the Salisbury Axle Co., Jamestown, N. Y., met Aug. 11 to ratify the sale of the company to C. A. Dana, president and treasurer of the Spicer Manufacturing Corporation. This action follows a succession of rumors, lasting over several weeks, involving the suggestion of a tendency among some of the independent parts makers to consolidate for mutual advantage and protection.

That the Spicer manufacturing interests might become involved in such a consolidation was generally understood, the plan, as then under discussion, having been outlined previously. In the arrangements now perfected the manufacturing and marketing relations of the Spicer joints and propeller shafts and Salisbury axles is seen a possibility of mutual benefit that is likely to prove attractive to both concerns. The new owners will greatly increase the capacity of the axle business, it is understood.

NEW TRACTOR IN THE FIELD.

The Phoenix Manufacturing Co., Eau Claire, Wis., is constructing a new type tractor under contract with the Yankee Boy Corporation, which is about to enter the industry. The machines now building will be used for demonstrations and the Yankee Boy company intends to open a factory of its own before the end of the year. The new tractor has three to four plow capacity, burning kerosene as fuel.

ROESCH TOOL CO. ORGANIZED.

The Roesch Tool Co., Detroit, Mich., has been granted a charter with a capital stock of $20,000. The company formerly operated under the name of the R. & L. Tool Co. and employed 25 men. The plant will produce tools, dies and steel products. George F. Roesch and F. E. Calkins are the principal stockholders.

NEW ILLINOIS TRACTOR COMPANY.

The Winnebago Tractor Co., Rockford, Ill., has been incorporated with a capital stock of $150,000. It is proposed to manufacture and deal in a new type of tractor as soon as suitable buildings can be erected. The incorporators are G. N. Whitford, N. C. Bement and A. L. Wienke.

BEAR TRACTOR CO. CHARTERED.

The Bear Tractor Corporation of America, with a capital stock of $2,500,000, has been organized in Delaware to manufacture and deal in farm tractors. The incorporators are S. I. Donner, J. L. Crandall and H. A. Victor Crawford.

The Wisconsin Screw Co., Racine, Wis., has been organized with a capital of $25,000 by Stanley and Paul Kelesky and Stanley Kalicicki, and will engage in the manufacture of screw machine products, automotive parts and equipment.

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FOREIGN EXPANSION PLANS FOR THE FORD.

The Ford Motor Co., planning an extensive foreign business with the resumption of normal commerce conditions following the war, has work well under way for location of assembling plants at Copenhagen, Denmark and Cadiz, Spain. Machinery is already on the ground for the Copenhagen plant, which will have an initial capacity of 25 cars a day, and 700 knocked down machines are en route for the commencement of active operations. J. J. Harrington, former Ford manager in Boston, sailed recently to assume charge in the Danish capital.

Equipment for the Cadiz plant, also to turn out 25 cars daily, is on the way, and the Ford export officials will announce shortly the manager of operations in Spain.

It was stated at Ford headquarters in New York that development of the foreign field is being pushed with vigor and that demands for cars from all parts of the world are giving it a steady impetus. The British Ford interests are rapidly being reorganized after the war period under the direction of W. C. Anderson, former St. Louis manager, with Sir Percival Perry, former British director, in charge of Fordson tractor production in the United Kingdom.

PISTON RING CO. TO ENLARGE.

The Piston Ring Co., Muskegon, Mich., will begin immediately construction of an addition that will be two-thirds the size of the present plant. It will be finished in four months and will consist of a four-story, reenforced concrete building, a one-story ell and a brick building in the rear. The four-story structure will be 133 feet in length and 55 feet wide, while the ell will be 65 by 55 feet. The brick building will be 65 by 60 feet. Another addition to the machine shop, besides a foundry more than double the size of the one now in use, will be erected in the near future. The present floor space of the concern is 48,209 square feet, while 32,461 square feet will be added.

TO MANUFACTURE ACCESSORIES.

The Standard Metal Products Co. of Rock Island, Ill., has been incorporated and will manufacture automotive accessories. The officers of the new concern are as follows: President, Richard Sybenga; vice president, E. F. Dorn; secretary and treasurer, R. M. Pierce. The plant will be located at the corner of Third avenue and 24th street. The capital stock has been fixed at $50,000.

PEORIA TRACTOR CO. BUYS SITE.

The Peoria Tractor Co., which recently was reincorporated in Iowa, has purchased a building site in Des Moines. A number of Des Moines capitalists are interested in the company. This means the removal of the company from Peoria, Ill.

German Army Trucks Will Be Tested by Experts

Representatives of the Society of Automotive Engineers, the National Automobile Chamber of Commerce and the Motor and Accessory Manufacturers' Association, in conference with officers of the Motor Transport Corps of the United States Army, have formulated plans for the proposed research investigation of the 47 German motor trucks recently brought to this country by Lieut. Col. A. J. Slade under the terms of the armistice.

These trucks were selected by Col. Slade from the 1250 turned over by Germany to the United States under the terms of the armistice. They represent the best available examples of current German practise in truck construction. The Motor Transport Corps felt that an investigation of these trucks would be of great value both to the industry and to the government, and with this end in view made preliminary plans for testing and examining them, inviting cooperation of the industry in the matter.

It was decided to place L. P. Kalb of the Standard Parts Co. in charge of the work for the entire industry. He will represent the three associations. Mr. Kalb is chairman of the Truck Standards Division of the Standards Committee of the Society of Automotive Engineers. During the war he was a major in the Motor Transport Corps and took a leading part in the standardization of the army motor truck. It was felt, therefore, that he was particularly well qualified for the work.

Christian Girl, chairman of the German Motor Truck Committee of the Motor and Accessory Manufacturers' Association, suggested Mr. Kalb to represent that association in the investigation, and inasmuch as the Society of Automotive Engineers had also selected Mr. Kalb, the choice was concurred in by the National Automobile Chamber of Commerce and it was decided to have him supervise the work for the entire industry. Mr. Kalb has visited Washington to confer with the officials of the Motor Transport Corps and to look over the trucks in a preliminary way. He will map out a detailed program for the investigation, and will determine the scope and character of the organization necessary to carry out the work so as to be of the broadest benefit to the industry and the government.

Action was started on July 12 when Col. W. F. Herringshaw, chief special service division of the Motor Transport Corps, Washington, D. C., addressed a communication to the Society of Automotive Engineers, the National Automobile Chamber of Commerce and the Motor and Accessory Manufacturers' Association, inviting their cooperation in a comprehensive investigation of the German trucks. The following excerpts from the communication indicate the general scope and purpose of the investigation:

It will probably be desirable to determine the performance characteristics of some of the vehicles. This matter is now being studied, but it is suggested that a short road test be made on each truck, in order to determine the fuel consumption per mile and per ton mile. It is hoped also to make arrangements so that tests will be made of the typical engines, steering gear, transmissions, rear axles and brakes. It is believed also that some samples should be taken of the more important parts of each unit for the purpose of chemical analysis. It may be possible to determine the physical properties of some of these parts. If it can be obtained the complete transmission efficiency, engine to rear wheels, will be valuable. It is believed that such a measurement will be more useful than the drawbar pull. Most of the German trucks, of course, are fitted with steel tires so that any drawbar measurements would not be comparable with American practise.

After a general study has been made of the truck it has been suggested that some of the important parts be lent to manufacturers who might make a closer study of such parts as the engine, carburetor, transmission and magneto. It is possible that such an arrangement might be worked out with the understanding that a complete report of each study was to be made available to the Motor Transport Corps and to the industry in general.

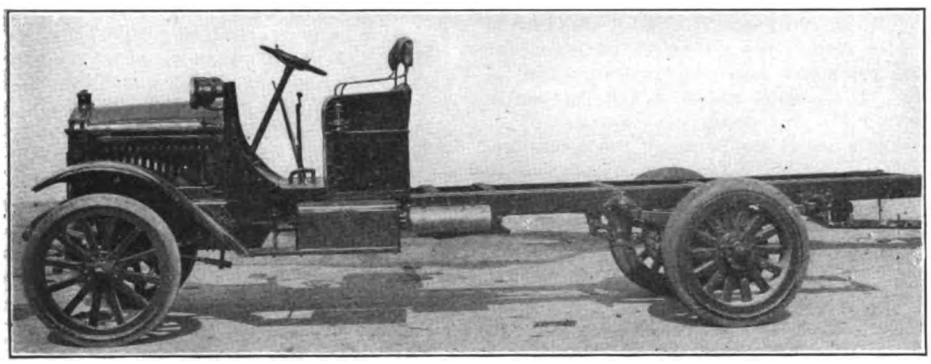


Hall Five-Ton Truck Chassis, Equipped with Wide-Rimmed Steel Wheels, Hydraulic Hoist and End-Discharge Dump Body, in the Service of the Howard-Cooper Corporation, Highway Contractor, Portland, Ore.

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WALKER-JOHNSON 2½-TON TRUCK

ENGAGING in the power truck industry and the production of the first of a series of trucks is announced by the Walker-Johnson Co., with offices at 163 Massachusetts avenue, Boston, and factory at Woburn, a city just outside of Boston. The Walker-Johnson Co., of which W. J. Walker is president and treasurer, has been operating in Boston and eastern New England for several years as a dealer and distributor, and is well known. The company was originated by W. J. Walker, who has been progressive in his business policies and methods and has been very successful in developing a sales organization.



The New Walker-Johnson 2½-Ton Truck Chassis with Standard Equipment and Solid Tires and Gas Dash Lamps.

Mr. Walker's experience with trucks built in the Middle West and sold by dealers has been such as to convince him that as a rule owners cannot receive as satisfactory service from the trade as when dealing direct with the factory. The man who buys a power truck has good business reasons for making investment, and of these the one most pronounced is making a profit.

There are various reasons why a particular make of machine may be selected, but when it has been acquired the owner wants it in condition for use as nearly continuously as is possible. He realizes that it must be inspected, adjusted, repaired and from time to time overhauled, but with a minimum loss of time, and he expects that whenever work is necessary that this should be done so there will be as little loss of service time as is practical.

Value of Special Factory Service.

In some instances, in large cities, the branch or dealer service station is especially equipped to afford owner service and may have the facilities and equipment that will justify undertaking any work and delivering it as near as possible to a given date and hour. As a rule, however, the majority of sales representatives cannot give the same service as is afforded by a factory, especially if it has specialized its organization and educated truck buyers to depending upon it for whatever work may be necessary to maintain their vehicles in operative condition.

The necessity of special service was one of the reasons for the decision of the company to enter the industry, and another, and equally potent, was the fact that a design had been determined that is maintained to be of exceptional quality. This design was worked out by Chester Bates, who is very widely known as an engineer, he having produced passenger car and truck chassis that have been proven by service to be especially desirable.

Specialized Construction Units.

Instead of designing all construction units, however, Mr. Bates selected what was found after exhaustive tests to measure to his standards of quality and with various chassis were constructed and tested to meet what was believed to be the needs of the discriminating buyer. The experimental work was continued over a considerable period of time and a design and assembly was decided on that would be equal to the standard set.

The Walker-Johnson Co. then decided to engage in manufacturing trucks and a plant at Woburn was acquired. This is a property of 12 acres on which are a number of modern buildings, well located with reference to manufacturing, receiving and shipping, and which is extremely accessible for the factory service that the company will specialize. The plant is so planned that production can be very advantageously carried on, the buildings are well lighted, heated and ventilated and have practically all of the equipment that makes for the comfort and convenience of the worker.

High Class Factory Equipment.

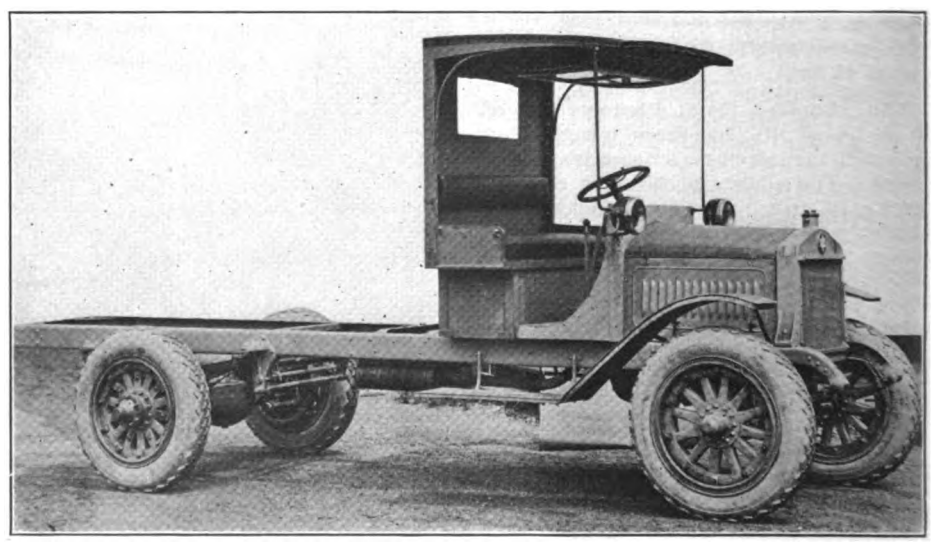
The buildings have been equipped with the latest type machine tools and machinery, and the company is now beginning production of the first truck, which is a 2½-ton size. Because the design has been standardized the intention is to have this continue through all machines that will be produced, so that the main difference will be in dimensions.

Claim is made by the company that the units have been determined with the primary object of obtaining quality. These have been assembled with extreme care to have accessibility, that inspection, adjustment and repair may be made quickly; to minimize the time and labor necessary for upkeep and maintenance; to insure high operating efficiency with low consumption of fuel and lubricant; to have long service life and exceptional endurance in all operating conditions.

Designed for Long Endurance.

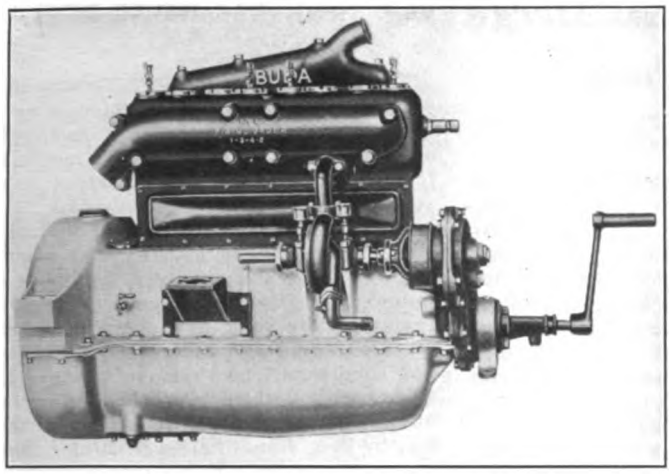
All the units have large factors of safety; all moving parts in frictional contact have large bearing areas; all parts that might be affected by abrasive action are enclosed and protected thoroughly, and lubrication has been considered of prime importance. The company maintains that the chassis, because of the extreme care in assembly, has unusual strength, yet this has been obtained by careful proportioning of the parts, for the weight of the chassis is but 4600 pounds complete, or less than the normal freight rating.

The attention given to assembling details is claimed to insure equality of construction so that there shall be uniformity of structural strength and endurance that will afford extremely long service life. The company guarantees each chassis for a year from the date of delivery against defective material and workmanship. This is based on the character of the units and the efficiency of the factory methods and organization.



Walker-Johnson 2½-Ton Truck Chassis with Driver's Cab and Equipped with Pneumatic Cord Tires, Ready for Body Installation.

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The Buda Model HU Engine, a Heavy Duty Type Specially Built for Truck and Tractor Use.

The construction units include Buda model HU engines, equipped with Eisemann high-tension magnetos, Zenith carburetors and Pierce governors; Bush radiators, Brown-Lipe dry disc clutches, Brown-Lipe transmission gearsets, Spicer driving shafts and universal joints, Timken I section front axles, Timken full-floating worm shaft and worm wheel driven rear axles; Ross steering gears and Goodyear or Firestone tires. The other components are equally good quality and all of these are known and recognized wherever power vehicles are used as being the products of specialists that have been proven in service and are known as standards of the industry.

The 2½-ton chassis has a wheelbase of 150 inches in the standard size or length, but longer or shorter lengths can be built to meet special requirements. The tread forward is 58½ inches and rear 60 inches.

The Buda Model HU Engine.

The Buda engine is the model HU four-cylinder, four-cycle, water cooled, vertical, L head type, especially developed for truck construction. This engine was so close to the government specifications for army service that it was accepted with very slight modifications for Motor Transport units, and to meet the needs of the War Department these engines were built in large numbers under license by other engine manufacturers until after the signing of the armistice with Germany.

The engine cylinder bore is 4¼ inches and the stroke 5½ inches, and the rating by the S. A. E. formula is 28.90, but the engine has developed 52 horsepower at 1850 revolutions by dynamometer test and at 1100 revolutions, to which speed it is governed in the truck, it produces 38 horsepower.

The cylinders are cast with the water jacket integral and the head of the jacket open, this being closed by a large cast plate with the outlet manifold integral, this having a deep longitudinal channel to direct the movement of the water over the cylinder heads. The construction is such that the water chambers can be cleared perfectly, which insures high radiating efficiency. The head is retained by a series of cap screws and studs. The water enters the jacket directly under the valves. The pistons are cast from the same material as the cylinders. Much care is taken in testing and machining the units.

The crankcase is cast in two sections from fine gray iron, the upper section being divided by a central transverse vertical web that carries the center main bearing. There are forward and rear extensions that house the timing gearset and flywheel. The lower section is cast iron and this has a rear extension for the flywheel housing. The section has a removable plate seated on ribs that separates the crank chamber from the oil reservoir.

The pistons are turned and ground to size and are channelled for three diagonally split rings that are carefully fitted. The crankshaft is drop forged from a special steel with the flywheel flange integral. It is heat treated and ground to size. The camshaft is a steel drop forging with the cams and the timing gear flange integral. This is machined and case hardened and the cams are specially ground. The connecting rods are I section steel drop forgings that are heat treated.

Other Engine Construction Details.

The valves are the usual poppet type, with cast iron heads electrically welded to soft steel stems, that are interchangeable. The valve tappets are large, a mushroom type that are fitted with adjusting screws and nuts. The timing gearsets are large, have wide faces and are cut helically to insure noiseless operation. End play is obviated by the use of flanges and thrust screws. The gears are accessible by the removal of the housing cover and with this removed the camshaft can be quickly taken out.

The main and the crankpin bearings are babbitt metal in bronze cages that are adjustable with shims, each cap being retained by four special steel heat treated bolts. The camshaft is mounted in phosphor bronze and the wristpin ends of the connecting rods are bushed with bronze. The wristpins are hardened steel tube, ground and anchored in the piston bosses, the connecting rods oscillating on them.

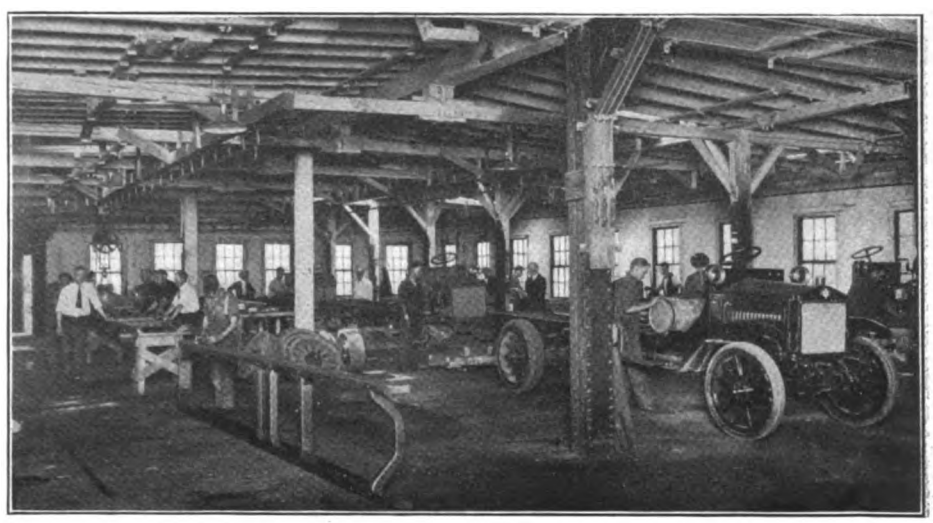
The Cooling and Lubricating Systems.

The engine is cooled by a circulation of water forced through the cylinder jackets and a large radiator by a centrifugal pump that has a bronze impeller mounted on bronze bearings. The radiator has cast top and bottom tank with a Bush cooling section, the unit being assembled with bolts and can be disassembled for cleaning. The radiator is cooled by a four-bladed fan carried on a ball bearing on an adjustable bracket that is driven by a flat belt from a pulley on an extension of the water pump shaft.

The engine is lubricated by a full pressure system. The lubricant is drawn from the reservoir by a geared pump and is forced through tube to the timing gearset and the main bearings, and through the channelled crankshaft to the crankpins and thence through tube to the wristpins. The camshaft is lubricated by ducts from this system. A pressure relief valve insures against excessive pressure. The cylinder and piston walls and the cams and tappets are lubricated by oil distributed by the centrifugal movement of the crankshaft. The oil pump and intake screen are removable from the bottom of the crankcase section.

Power Plant Mounted on Three Points.

The engine is suspended at three points, on the frame side members and a trunnion on the front cross member. With the engine is assembled the Brown-Lipe multiple dry disc clutch, which is practically self-compensating and requires little attention. There is a universal joint in the clutch shaft ahead of the transmission gearset case. The gearset is a selective sliding gear type with heavy shafts and wide gears with wide faces, having four forward speeds and



A Section of the Assembling Floor of the Walker-Johnson Truck Co.'s Plant at Woburn, Mass. The Property Is Suited for Large Expansion.

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reserve. The direct drive is the fourth speed ratio.

There are two universal joints in the main driving shaft, which is coupled to the worm shaft of the Timken full-floating axle. This unit has a one-piece housing with a bowled central section, and on the cover plate of the bowl is assembled the worm shaft, the worm wheel and the differential gearset, all of which are mounted on Timken roller bearings, which are adjustable for wear. The wheels are mounted on similar bearings on the outer ends of the axle housing and the driving shaft clutch plates engage with the hubs of the wheels. The worm shaft and worm wheel are cut by the well known David Brown process, the wheel from a high grade bronze and the worm shaft from a special steel. The entire axle is lubricated from a bath of oil in which the worm wheel revolves in the center bowl of the axle housing. The front axle is a steel drop forging, I section, 2 by 2¾ inches, fitted with heavy steering knuckles and Timken roller bearings.

The Frame and Springs.

The frame is a pressed steel channel section, heat treated, made from stock a quarter inch thick, 6⅛ inches wide, with webs three inches width. This is reinforced with cross members that are strongly gusseted. The frame is suspended on semi-elliptic springs, the rear ends of which are shackled, and the forward ends are pivoted, the drive being by the Hotchkiss principle, the springs taking the driving and braking stresses. The springs are vanadium steel, the front set being 39½ inches long and 2½ inches wide, and the rear set 52 inches long and three inches wide.

The steering gear is a Ross BL heavy truck type, located at the left side, with an 18-inch hand wheel. The control is by foot pedals for the clutch and service brake, fuel and ignition hand levers on the steering column, and gear shifting and emergency brake levers in the center of the footboard. The brakes are the well known duplex construction, both sets of shoes being internal expanding within drums on the rear wheels. The wheels are wood, artillery type, the forward set having 12 2½-inch spokes and the rear set 14 three-inch spokes, which are shod with 36 by four-inch tires forward and 36 by eight-inch dual tires at the rear. The buyer has the choice of solid or pneumatic tires.

The regular equipment of the chassis includes driver's seat, fenders, running boards, gas dash and oil tail lamps, complete set of tools, jack and tool box. Driver's cabs and bodies of all types will be supplied at extra cost.

NEW ADDITION TO TITAN PLANT.

Ground was broken Aug. 15 for a large extension of the factory of the Titan Motor Truck Co., Milwaukee, Wis., which will be made ready about Oct. 15 or Nov. 1 and provide a 300 per cent. increase in capacity. The building will be 150 by 160 feet and provide a new machine shop, assembling floor, service station, shipping room and office.

Three Concerns Merge to Form Jackson Motor Corp.

A $5,000,000 car and truck company has recently been formed in Jackson, Mich., through the merger of the Jackson Motor and Manufacturing Co., Jackson Automobile Co. and the Four Wheel Drive Truck Corporation of Chicago and Port Jefferson, L. I. The new corporation will be known as the Jackson Motors Corporation. It will manufacture cars and trucks and proposes to produce during the next 12 months 4000 cars and 1200 four wheel drive trucks of 3½ tons capacity.

The concern will occupy the present plant of the Jackson Automobile Co. and will employ about 1000 men. The proposed car to be turned out will be a six-cylinder. The company is operating on a contract with General Motors to finish 10,000 coupe and sedan bodies, which means a production of 40 bodies daily.

The officers of the new organization are: President, H. A. Matthews, Jackson; vice president, W. W. Sterling, Boston, Mass.; secretary, Carl L. V. Exselsen, Chicago; treasurer, F. O. Evans, Chicago. The board of directors is composed of C. O. Minger, president and general manager of the Electric Auto Light Corporation, and vice president of Willys-Overland; F. E. Mosher, secretary and general manager of the Covert Gear Co.; G. W. Rogers, Goodyear Tire and Rubber Co.; Crispon Oglebay, president and general manager of the Ferry Machine and Foundry Co.; H. A. Matthews, formerly president of the Jackson Automobile Co.; W. W. Sterling, Boston, Mass.; Carl L. V. Exselsen, Chicago, president and general manager of the Portage Silica Products Co., Portage, Wis.; F. O. Evans, president and general manager of the Evans Art Piano Co.; F. C. Matthews, former secretary and general superintendent of the Jackson Automobile Co.

The machinery and all equipment of the Four Wheel Drive Truck Corporation, plants at Chicago and Long Island, have been shipped to the Jackson plant. Both plants have been completely dismantled, and Jackson will be the main home of the organization. The Jackson Automboile Co. discontinued the manufacture of its car at the outbreak of the war and went into munition work. After the signing of the armistice the manufacture of the car was not taken up, the company devoting itself to preparations for truck production. The first completed machine will be placed on the market very soon.

NOW MANUFACTURERS' REPRESENTATIVE.

Earl W. McGookin, vice president of the M. V. Kelley Co., advertising agents, New York and Toledo, who resigned some time ago, will return to Detroit to resume his work as manufacturers' representative.

NEW YEAR BOOK ISSUED BY M. A. M. A.

The Motor and Accessory Manufacturers' Association recently issued a new year book. This is the first published appearance of this book in so attractive a form, and the matter is presented in a very pleasing manner.

It contains besides the usual information of a catalogue nature, sepia prints of the officers and directors, and several noteworthy articles. Among these is a review of the year, by General Manager M. L. Heminway, another, a "Promise and Challenge," by President Charles E. Thompson. A third is a laudation of the automobile industry's activities in the war by Brig. Gen. Charles B. Drake, chief of the Motor Transport Corps, especially written for the purpose.

AMERICAN TRUCK CO. BUYS FACTORY.

Sale of the plant of the Portland Manufacturing Co., Portland, Conn., to the American Motor Truck Co. of New York City has been made. The company will start work in Portland shortly and plans to manufacture motor trucks of all sizes. The first truck manufactured will be a four-ton unit, but later all sizes will be made. The company has already expended a large amount in experimental work and is now prepared to manufacture.

GENERAL HARVESTER CO. INCORPORATED.

The General Harvester Corporation has been incorporated under the laws of Michigan according to late announcements, to engage in the manufacture and sale of agricultural machinery. The company has a normal capital of $100,000, but it is stated that this will be increased to $10,000,000 when certain units, tentatively accepted, are included in the merger.

METAL PRODUCTS CO. A NEW CONCERN.

The Seeger Manufacturing Co., Chicago, manufacturer of oil burning garage heaters, which recently moved to Wausau, Wis., has effected a consolidation with the Wisconsin Valley Sheet Metal Works. The Metal Products Co. of Wausau is the result. It is a $15,000 corporation organized under the laws of Wisconsin.

POST TRACTOR IN PRODUCTION SHORTLY.

The Post Tractor Co., Cleveland, O., expects to get into its new factory within the next 30 days and will immediately start limited production. The company is planning to build about five machines a day and increase this as fast as production facilities will allow.

The Hoover Steel Ball Co., Ann Harbor, Mich., paid a stock dividend of two per cent. on its June earnings recently.

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UNIVERSAL PRODUCTS CO.'S NEW LIGHT UNIT.

That the requirements of the farm lighting and power equipment field may be completely covered the Universal Products Co., Sandusky, O., has added a new unit to its series of farm lighting plants. The new plant is smaller than any of the others brought out by the company and has been especially designed to cover the requirements of smaller farmers, as well as those homes where a larger service is not required. For this reason it is believed it will fill a real need.

NORTHERN WHEEL CO. TO BUILD AT ALMA.

The Northern Wheel Co., a new million dollar corporation, will locate at Alma, Mich., and is planning to be in operation about Dec. 1, according to a recent announcement. Work on the first building of the plant, which will be of brick and concrete, 60 by 304 feet, will be started within two weeks. Wheels for both passenger and commercial cars will be made, it is thought, by the first of the year.

NEW MANAGER FOR THE WEIDLEY COMPANY.

The Weidley Motors Co., Indianapolis, Ind., manufacturer of Weidley motors for tractors, has placed B. F. Kelley in charge of sales. Mr. Kelley for a number of years was district sales representative for the National Acme Co. and more recently became a partner in the Bernard E. Griffey Motor Supply Co., Indianapolis, in which firm he retains an interest.

AULT WITH GRANT MOTOR CORPORATION.

George A. Ault, who during the first two years of the war was connected with the Curtiss Aeroplane and Motor Corporation, and during the later stages of the war with the Canadian Aeroplane Co., Toronto, has been appointed material supervisor in the production division of the Grant Motor Car Corporation, Cleveland, O.

KELLY-SPRINGFIELD TIRE CONTRACTS.

Contracts have been closed with the Kelly-Springfield Tire Co. by the Packard Motor Car Co. for its standard equipment for passenger cars and trucks by the Federal Truck Co. for pneumatic tires exclusively by the Winton Motor Car Co. for standard equipment of its passenger cars.

NOW CHIEF ENGINEER FOR FALLS MOTORS.

L. T. Knocks has resigned as experimental engineer of the Waukesha Motor Co., Waukesha, Wis., to become chief engineer with the Falls Motors Corporation, Sheboygan Falls, Wis.

Gain in Trailer Use Shown by State Registration

Where the loads to be hauled are heavy or bulky the use of trailers has been very practical by haulage contractors or those who have large volumes of freight to transport. The average truck will serve as a tractor for a trailer and the two will carry approximately double the load of the truck with an increase of from 15 to 25 per cent. of operating cost.

Trailers have been so much improved in design and construction that they can be regarded dependable in construction as standard trucks and tractors, while they have considerably longer service life. According to the statistics gathered by the Trailer Manufacturers' Association, the registration figures of a few of the states show that the use of trailers is increasing more rapidly than trucks—that is, the percentage of increase is larger wherever separate registration figures are obtainable:

In New York state the number of trailers increased 125 per cent., or more than doubled, during the year ended Jan. 31, 1919, while motor trucks increased 32 per cent. In the registration year ended Jan. 31, 1918, there were 55,402 motor trucks and 985 trailers, and one year later there were 73,309 trucks and 2218 trailers.

In Pennsylvania trailer registrations increased 164 per cent. and truck registrations 40 per cent. during 1916, trailers 72 per cent. and trucks 63 per cent. in 1917, and trailers 50 per cent. and trucks 63 per cent. last year.

Trailers increased 82 per cent. in New Jersey last year as compared with a 40 per cent. increase in trucks the year before. A new state law that went into effect at the beginning of 1918 changed the basis of registration so that the increase in trucks last year cannot be calculated.

There was an increase of 170 per cent. in trailers in one year in California from 353 on June 30, 1918, to 956 on June 30, this year. During the same period the total number of passenger automobiles and motor trucks increased 20 per cent., from 335,443 to 403,802.

It is to be expected that trailer registrations will grow faster than truck or passenger car registrations, as trailers are a comparatively recent development in highway transportation and it may take from five to 10 years for them to overcome the lead gained by motor vehicles. With nearly 6,000,000 passenger automobiles and 500,000 motor trucks in service in the United States, a large percentage of which could draw trailers with advantage and economy for their owners, it will not be surprising if the number of trailers is doubled or even tripled annually for the next five years at least.

The following table shows the truck and trailer registrations and the percentage of increase in the four states:

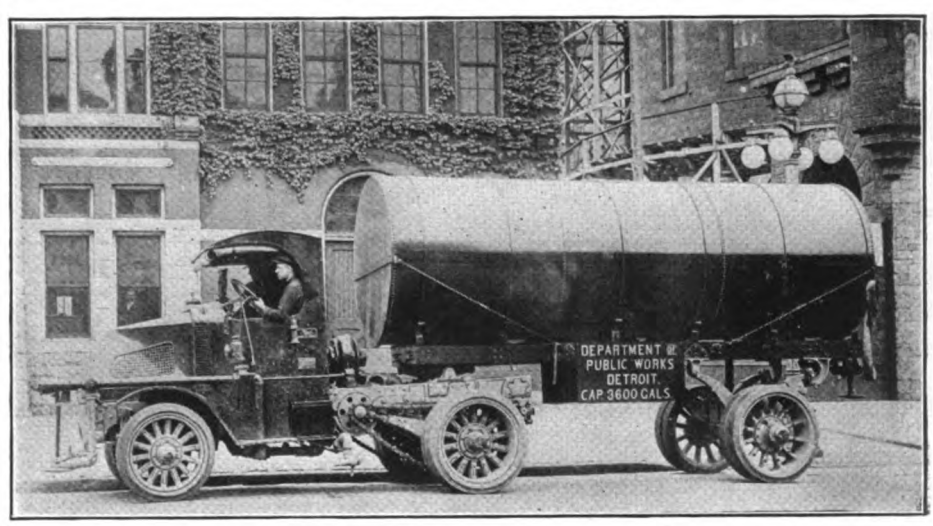
INCREASES IN TRUCKS AND TRAILERS.

	Trucks	Inc.	Trailers	Inc.
	New York State.			
1917	55,402	....	985	....
1918	73,309	32%	2,218	125%
	Pennsylvania.			
1915	8,379	....	188	....
1916	11,732	40%	496	164%
1917	19,152	63%	854	72%
1918	31,185	63%	1,284	50%
	New Jersey.			
1916	5,073	....	315	....
1917	6,954	40%	321	2%
1918	*15,736	?	585	82%
	California.			
1918	**335,443	....	353	....
1919	**403,802	20%	956	170%

*Includes all solid tired motor vehicles. In former years only those weighing 4000 pounds or over were registered as trucks.
**Includes passenger cars and trucks.

BUICK CARBURETOR TO BE MADE AT WYANDOTTE.

David and Thomas Buick, designers of the original Buick automobile and organizers of the Buick Motor Car Co., Flint, Mich., have designed and are about to place a new carburetor on the market. The new carburetor will be manufactured at Wyandotte, Mich., in the plant of the defunct Detroit-Wyandotte Motor Co. This property has been acquired by the Buick Brothers. Manufacturing operations were started Aug. 1.



Mammoth Semi-Trailer Tank in Service of Detroit Department of Public Works, Capacity 3600 Gallons, Weighing 28,800 Pounds, Exclusive of the Outfit.

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MARLIN-ROCKWELL NOW ON PEACE WORK.

Despite the handicap made necessary by turning from war to peace production, the report of the Marlin-Rockwell Corporation, New York City, for the first half of 1919 reveals a condition thoroughly satisfactory in every respect. Sales for the first six months of the present year total $7,051,315, and the company's net income is shown to be $728,538. Obviously, these figures as compared to the business done during the same period of 1918 show a falling off which, however, is easily accounted for in the conditions existing after the signing of the armistice and which to a certain extent effected every manufacturing plant throughout the country.

The net working capital of the company on June 30 last amounted to $4,633,660. Current assets at that time included, inventory, $7,269,846; cash, $4,660,543; notes and account receivable, $1,133,285. Liberty bonds were bought to the amount of $473,774 by the company.

On the liability side of the balance sheet, current liabilities include notes payable and United States advances, $3,644,669. Accounts payable are shown to the total of $1,259,118.

The cost of the sales for the first six months of the present year totals $5,899,780, while for the same period in 1918 this amounted to $9,519,416. Deductions from income for the same period in 1919 are shown to be $422,997, while for the same period in the year preceding they are listed at $743,797. Additions to income on the other hand show an increase of $364,453, this item being $468,311 for the 1919 period, and $103,848 for the same period in the year preceding.

MUNRO WITH GREENE-FULTON-CUNNINGHAM CO.

W. J. Munro, assistant advertising manager of the General Motors Truck Co., has resigned to return to his position with the Greene-Fulton-Cunningham Co., which handles the advertising of GMC trucks.

England Will Admit American Motor Imports

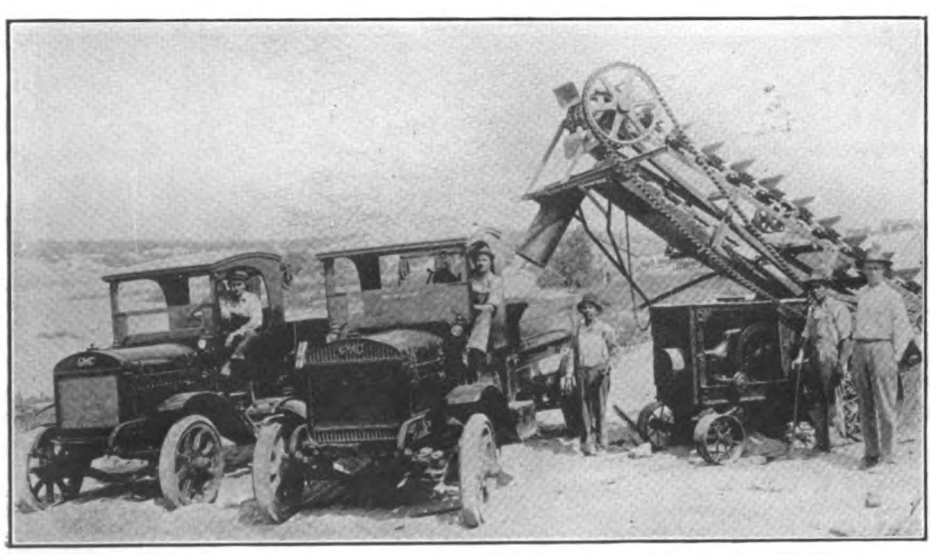
England will admit automobiles, trucks and motorcycles during the next few months, possibly to the number of 5000, according to the American Chamber of Commerce of London in a statement sent to this country. Following the armistice with Germany English importers of power vehicles have been limited to 50 per cent. of the number of machines they imported in 1913, in monthly allotments, this to continue until Sept. 1, 1919, at which date there is expectancy of an announcement of the international policy of the British government. Under this plan those importers who engaged in business later than 1913 have been denied imports.

The English Board of Trade, which really represents the government, has made request of the American Chamber of Commerce in London as the logical representative of the Anglo-American trade, to suggest a plan which would afford each importer, no matter how long established, a fair allotment of imports from the United States.

The chamber has suggested as a basis of distribution the yearly average of imports obtained by adding the totals for 1912-1913-1914-1915, and dividing by four. This scheme avowedly gives preference to those importers whose organizations have been in existence for a long time, but also takes into account the importers who started in 1914 and 1915.

The plan has been ratified unanimously by the importers, as being the fairest to all concerned, and the Board of Trade is now circularizing the entire trade for their returns on this basis.

Although this is only a temporary arrangement, and should in no way be taken as an indication of the British government's trade policy on motor vehicles after Sept. 1, the news will be welcome to American manufacturers who have had trouble up to the present in putting their cars on the British market.



Two GMC Trucks Operated in Municipal Work at Joplin, Mo., at a Loading Machine in a Gravel Bank Owned by the City.

McCORD INTERESTS TAKE RUSSEL AXLE.

The Russel Motor Axle Co., Detroit, Mich., was recently purchased by McCord & Co., Chicago, a large steel manufacturer in that city, of which the McCord Manufacturing Co. is an offspring. The McCord company, which pays 50 per cent. of the purchase price agreed upon in cash, and the balance in preferred and common stock, thus comes into a field which it has long considered entering, and enters it with a plant and product already known to the trade. While it is the Chicago company which closed the transaction, finding in the axle business another promising outlet for the production of its finely equipped steel foundries in Illinois, general sentiment inclines to the belief that the Russel company will eventually become a division of the McCord Manufacturing Co., Detroit, widely known for its radiators, as for its Heath-Duplex attachments for Ford cars and for its lubricators and lighter stampings.

The McCord Manufacturing Co., of which A. C. McCord is president, dates its existence in its present form since 1909. Prior to that time many numbers of the present line were manufactured in Chicago by the older company. Two plants are operated at present in Detroit, one in Wyandotte, Mich., and one in Walkerville, Ontario, Canada.

The Russel Motor Axle Co. is, of course, widely known through its championship of the cause of the internal gear drive axle, of which it is one of the leading producers. It, too, was formed in 1909, operating as a subsidiary company to the Russel Gear Works, also in Detroit. The Russel Axle Co., according to a recent report, had as its capital stock outstanding 6500 shares of common stock of the par value of $100 each.

SEIBERLING FOR A. A. C. PRESIDENT.

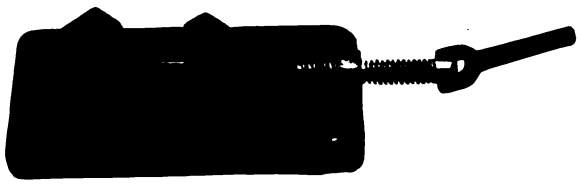
That F. A. Seiberling, president of the Goodyear Tire and Rubber Co., be made the next president of the Associated Advertising Clubs of the World is the nomination of the St. Paul, Minn., Advertising Club, offered for the approaching convention of the A. A. C. W., Sept. 21-25, at New Orleans. This tribute, which, of course, has no official bearing whatever, is admittedly put forward without consulting Mr. Seiberling himself, but rather out of a feeling of recognition for the important work that automobile and tire companies have taken in developing advertising, the Goodyear company ranking among the leaders in this work.

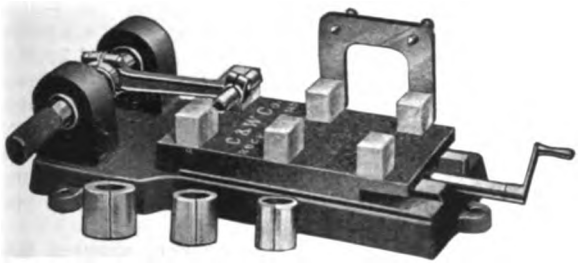
WILSON DIRECTORS ELECT OFFICERS.

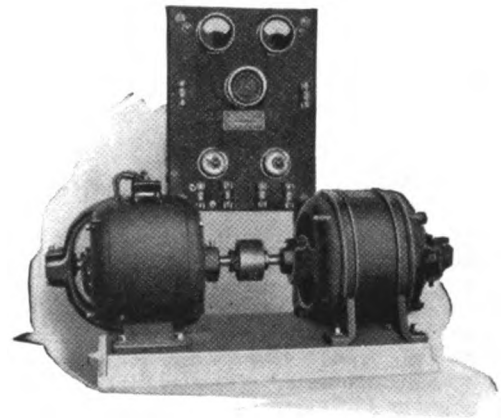
At the annual stockholders' meeting of the J. C. Wilson Co. of Detroit, Mich., the following directors were elected: J. C. Wilson, S. C. Wilson, C. E. Curtis, E. D. Hand, W. L. Murdock, W. H. Witt and Charles Noble. Officers were elected for the ensuing year as follows: President, J. C. Wilson; vice president, E. D. Hand; secretary and treasurer, S. C. Wilson, who also will serve as general manager.

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Garage and Service Station Machinery, Tools and Equipment







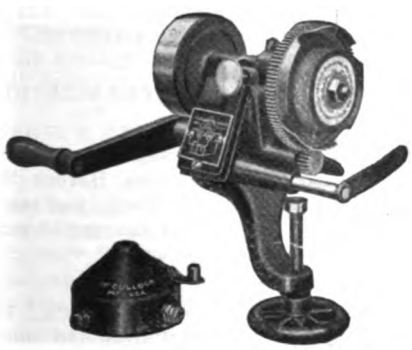
CONNECTING ROD ALIGNER AND PISTON CLAMP.

The Campbell & Wochner Co., 1611-15 Third avenue, Rock Island, Ill., produces a connecting rod aligner and piston clamp that is of unusual utility to garage owners and service station repairers. These are bench tools that will earn the investment in them many times over during the course of a year. The aligner not only proves connecting rod alignment, but also the cross diameter of the piston. By its use one may check the positions of the connecting rods, that is, the tops of the rods on the wristpins between the piston bosses. The manufacturer claims that with the aligner, connecting rods of all makes can be aligned quickly and accurately.

The piston vise or clamp is adjustable and will hold any piston from 2⅝ to 4½ inches. It is impossible to crack the skirt of the piston or to damage the rings in any manner. The machine is indestructible and when reaming for oversize pins or installing new bushings in a piston will prove indispensable. Fully guaranteed by the manufacturer.

McCULLOCH TIMER GRINDER FOR FORD TRUCKS.

The A. B. McCulloch Machine Co., 216 High street, Boston, Mass., is producing a timer grinder for Ford timers that



is a bench machine, operated by hand, that will grind the timer contacts absolutely true. The grinder is fitted with a special chuck that requires no skill whatever in centering; the grinding stone revolves inside the timer at high speed and the chuck and timer very slowly revolve around the stone. It is fitted with a very accurate adjustment and the manufacturer claims that the oldest and most worn timer may be ground with a surface like glass and equal to new in from two to three minutes. The machine is substantially constructed, all gears being cut from solid steel bar with lubricators fitted to all moving parts. When not in use as a timer grinder the chuck may be instantly removed, a large wheel fitted in its place and the machine can be used for grinding tools, twist drills, etc.

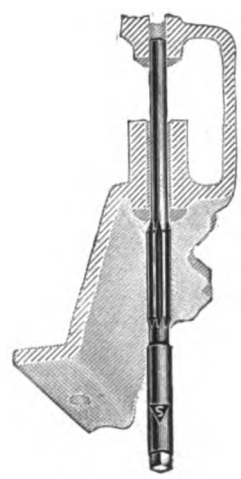
KEWANEE MOTOR GENERATOR SETS.

The Kewanee Private Utilities Co., Kewanee, Ill., manufactures a Kewanee motor generator charger for service stations that has many interesting features. Other sizes are also manufactured for private owners. The outfits include, beside the motor generators, a suitable panel of slate upon which is placed the instruments used for charging. Among these instruments are mentioned a generator field rheostat, voltmeter, ammeter, motor and generator circuit control switches, fuses, ammeter, reading switches, battery circuit switches and charging rheostats; also a circuit breaker when ordered. The regular equipment consists of a two-circuit panel, including instruments and switches as specified, with charging rheostat in one circuit. Additional circuits, circuit breaker and charging rheostats are furnished at extra prices. The voltmeter reads the voltage of the generator circuit only.

The motor generator sets are made from the best material obtainable, are guaranteed by the manufacturer, and may be operated either on single or double phase circuits alternating current. Will charge from one to six six-volt batteries in series, or double this number in multiple in the smaller sizes, and the larger outfits will charge from four to 13 six-volt batteries in series, or double this number in multiple, with the charging amperage varying from six to 37½. Experienced or unexperienced help can operate these outfits without difficulty, the regular service station help usually being sufficient.

PILOT REAMER FOR FORD OVERSIZE PUSH ROD.

Stevens & Co., 375 Broadway, New York City, is marketing the new Stevens reamer for Ford engines, which is unique in construction. The manufacturer claims that by its use oversize push rods can be quickly and easily installed in Ford engines. The reamer is used from the underside of the top half of the base



and is passed through the push rod bore, the upper end of the reamer carrying a long pilot, fitting the valve stem guide above and being held in alignment by the valve guide. This insures a true reamed guide for the push rod and the fitting of an oversize push rod. The reamer is 1/64 inch oversize and like all Stevens reamers is made of highest grade crucible steel, guaranteed for accuracy.

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NEW SALES POLICY OF HERCULES MOTOR CO.

Prompted by a desire to more thoroughly serve the truck and tractor manufacturing interests and to better handle its increasing business, the Hercules Motor Manufacturing Co., Canton, O., has inaugurated a new sales policy. The truck and tractor manufacturing have been divided into four districts, each under the supervision of a district sales manager. The districts and the men selected to supervise them are: Eastern, E. H. Geyer; Central, D. I. Cooke; Midwest, Allen Kendall; Pacific Coast, Geo. McMullen.

The Eastern or Atlantic district, with headquarters at Buffalo, N. Y., takes in New England and states along the Atlantic coast. Detroit is the center of the Central district, which takes in Ohio, Indiana, Michigan, Kentucky and the Gulf states. Headquarters for the Midwest will be in Chicago, from where operations will be carried on in Illinois, Wisconsin, Minnesota, Missouri, Nebraska, Kansas and the Dakotas. The Pacific coast territory takes in all the states west of the Rockies, San Francisco being the main office for that district.

GURNEY SALESMEN MEET.

The sales force of the Gurney Ball Bearing Co. held its semi-annual convention at Jamestown, N. Y., recently. Sessions were held with members of the engineering, metallurgical and production departments. At the the conclusion of the convention the company held its annual picnic, which was attended by nearly 1000 persons.

ENLARGE LYCOMING FACTORY.

The Lycoming Foundry and Machine Co., Williamsport, Pa., has completed plans and construction work for an addition of sufficient factory space to permit doubling the present output of Lycoming motors. The installation of new machinery in this space, as well as the entire space formerly used as the office, is planned.

GARDNER LEAVES VELIE COMPANY.

E. R. Gardner, who has been sales manager of the truck department of the Velie Motors Corporation, Moline, Ill., for the last two years, has been appointed sales manager of both truck and passenger car departments. Charles R. Gardner, sales manager of the department for the last two years, has resigned to become general manager for the Security Motor Co. of Omaha, Velie distributor for Omaha and vicinity.

GMC TO EXPAND TRUCK PLANT.

General Motors Corporation will build a $100,000 material warehouse and add additional office space at the General Motors Truck Co.'s plant at Pontiac, Mich. The warehouse is to be 80 by 300 feet. Office rooms will be secured by adding a second story to the present structure. This will provide an additional 8000 square feet of floor space to be used by the sales and engineering departments.

MAY ENTER THE TRUCK INDUSTRY.

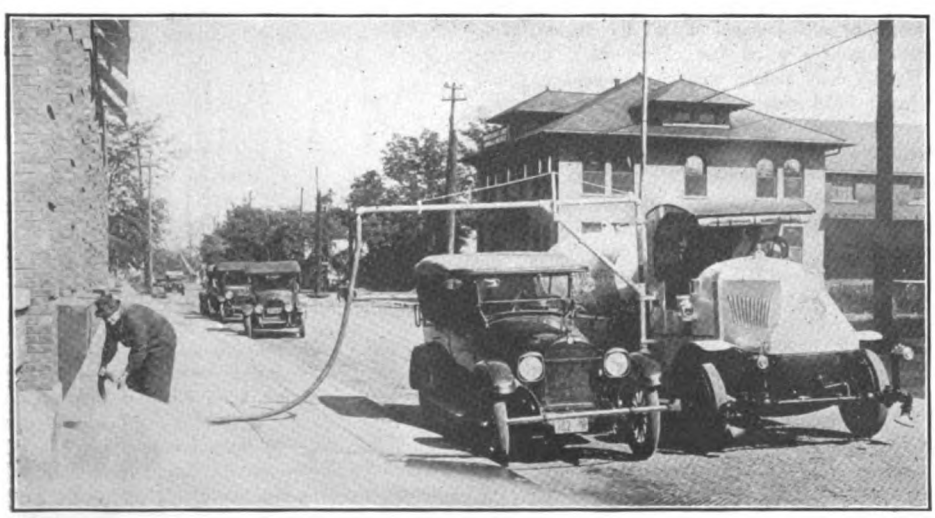
The Stoughton Wagon Co., Stoughton, Wis., is reported to be preparing to engage in motor truck body manufacturing. The Mandt Wagon Co., also of Stoughton, and now owned by the Moline Plow Co., has under consideration the extension of its business to embrace also motor truck and truck bodies.

NEW MANAGER FOR MIDLAND.

N. H. Williams has been appointed vice president and general manager of the Midland Motor Car and Truck Co., Lincoln, Neb. For six years Mr. Williams has been general sales manager for the Cushman Motor Works at Lincoln.

TRUCK PRODUCTION OF WHITE CO.

The White Co. of Cleveland, O., is now producing 37 trucks daily. The sales are holding up well and are far ahead of production. The company recently advanced its prices for its small and medium sized trucks.



Sprinkler, Flusher and Sidewalk Cleaner, a Studebaker Equipment on a Mack Truck Chassis, Used by the Richmond, Va., Street Cleaning Department.

U. S. RUBBER CO. HAS 90,000 ACRES IN SUMATRA.

The United States Rubber Co. recently announced that its holdings in Sumatra have reached 90,000 acres in the aggregate. Of this total about 45,000 acres are fully planted with more than 5,000,000 trees, of which 85 per cent. are now at the bearing age. Extensions to the planted area are contemplated at an early date and increased production is expected as the younger trees grow in girth.

The holdings are said to constitute one of the largest plantations in the world. Planting on the United States Co.'s property was begun in June, 1910, and by the end of the year 15,000 acres had been planted with growing trees. By the end of 1913 about 34,000 acres had been planted. The trees were planted 19 feet apart each way, 121 trees to the acre, with the view of bringing 100 trees per acre into bearing.

The plantation managers assured the company that they would have rubber from their own plantation in five years' time, but the growth was so rapid and healthy that rubber was obtained from newly planted trees in less than four years. About 20,000 coolies are employed on the plantations.

HARE RESIGNS FROM PACKARD CO.

Emlen S. Hare, vice president of the Packard Motor Car Co., Detroit, has resigned. His career with the Packard company started as a truck salesman in New York. He then became sales manager and later president of the New York company. He resigned as president to become vice president of the parent organization in Detroit. He has announced no future plans as yet.

FULTON CO. TO ENLARGE FACTORY.

The Fulton Co., Milwaukee, Wis., manufacturer of automotive equipment, will build a new plant on a site recently selected in the West Allis, a manufacturing suburb of Milwaukee. Plans are in preparation for a brick and steel factory 60 by 175 feet one and two stories high.

GMC PURCHASES TOOL CO.

The Hastings Consolidated Press and Tool Co., Hastings, Mich., has been purchased by the General Motors Corporation. The capacity of the plant will be quadrupled and 1200 men employed.

WILKINS JOINS REO ORGANIZATION.

A. E. Wilkins, who resigned as general superintendent of the Ann Harbor Machine Co., Ann Harbor, Mich., has taken a position with the engineering department of the Reo Motor Car Co.

The Sewell Cushion Wheel Co., Detroit, Mich., is negotiating to open branches on the Pacific coast at San Francisco, Portland and Seattle.

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IMPORTS INCREASE IN JULY, EXPORTS DECREASE.

Imports in July were the largest in the history of the country, while the exports were the lowest in any month of this year, according to a statement by the Bureau of Foreign and Domestic Commerce, of the Department of Commerce.

The July exports amounted to $570,000,000, nearly $350,000,000 less than in June, the high record month, but an increase over the $507,000,000 exports in July, 1918. For the seven months ended with July the exports were $4,618,000,000 in 1919 and $3,482,000,000 in 1918, an increase of nearly 33 per cent. in one year.

July imports were valued at $345,000,000 as against $293,000,000 in June, 1919, and $242,000,000 in July, 1918. They are the largest monthly imports in the history of our foreign trade, exceeding by $16,000,000 the previous high record in May of this year. Imports for the seven months ended with July were $1,955,000,000 in 1919, against $1,788,000,000 in 1918, an increase the last year of less than 10 per cent.

The excess of exports over imports was $225,000,000 in July, and $2,663,000,000 in the seven months of this year, $969,000,000 more than the excess in the seven months period of 1918 of $1,694,000,000, an increase of 57 per cent.

RELIANCE TRUCK CO. DOUBLES STOCK.

The Reliance Motor Truck Co., Appleton, Wis., announced recently an increase of from $500,000 to $1,000,000 in its capital stock. Plans are under way for the erection of a four-story plant addition, 70 by 300 feet, to cost about $160,000.

NEW SALES MANAGER FOR STANDARD TRUCK.

R. B. Bowman, for a number of years western representative of the White Co., and more recently connected with the Denby Motor Truck Co., has been appointed central sales manager of the Standard Motor Truck Co., Detroit.

NEW DIRECTOR FOR BETHLEHEM COMPANY.

J. Fletcher Farrell, treasurer and director of the Sinclair Oil Co., has been elected a director of the Bethlehem Motors Corporation. This concern reports a large business with all plants running to full capacity.

TRIANGLE TRUCK CO. TO ENLARGE PLANT.

The Triangle Motor Truck Co. of St. Johns, Mich., has increased its capital stock from $100,000 to $200,000. An enlargement of the company's factory has been planned.

The Hoover Steel Ball Co., Ann Harbor, Mich., recently paid a stock dividend of two per cent. on June earnings.

FARMER IS BIGGEST USER OF MOTOR TRUCKS.

The biggest users of motor trucks in the world are the American farmers, with 79,789 motor trucks in operation. Manufacturers come second with 75,928, and retailers third with 74,486.

These figures are taken from reliable statistics for the year 1917. Estimates for 1918 show a tremendous increase in the number of motor trucks in use, but with the farmer still in the lead.

It is estimated that during 1918 approximately 350,000,000 tons of farm products were hauled to market in motor trucks by the farmers and gardners of the United States.

The actual operating figures averaged for the United States show that motor truck transportation is twice as cheap as horsedrawn transportation. The motor truck handles life's necessities.

"Legislation which hits motor trucks hits at the very source of the life supply of the people," says R. E. Fulton, vice president of the International Motor Co., manufacturer of Mack trucks. "To unwisely legislate against the motor truck is to take food away from those who need it and to increase its cost.

"The motor truck is the people's friend and servant, and legislation aimed to injure and handicap motor truck transportation is a blow against the best interests of the people—both producers and consumers.

"Much of this 350,000,000 tons of food products hauled from the farm to the city by motor trucks was of a perishable nature, and hundreds of thousands of tons of it would have been lost but for the rapid transportation possible with the motor truck.

"Legislation aimed to hit motor truck transportation is the result of a narrow-minded attitude of some who hold mistaken notions that the motor truck hurts certain interests. The motor truck serves the needs of the people. It is for the people, both producers and consumers, to see that the motor truck is given a square deal and not discriminated against.

"Discrimination against motor trucks is discrimination against the source of livelihood of the people."

DIVISION OF STANDARDS, S. A. E., TO MEET.

Opening of the fall activities of the standard divisions of the Society of Automotive Engineers was forecasted by the announcement at New York recently that the first meeting of the iron and steel division of the committee would be held Sept. 16. F. P. Gilligan of the Henry Souther Engineering Corporation, Hartford, Conn., is chairman of this division.

POWERLOK TO OPEN CANADIAN BRANCH.

In answer to the increasing demand for Powerlok in Canada, the Powerlok Co. of Cleveland, O., has completed arrangements for the opening of a Canadian branch, which will be located at Walkerville, Ont. The branch will combine a general Canadian sales office and an assembling plant and will be under the supervision of D. C. Nale.

GEORGE H. GREEN NOW GENERAL MANAGER.

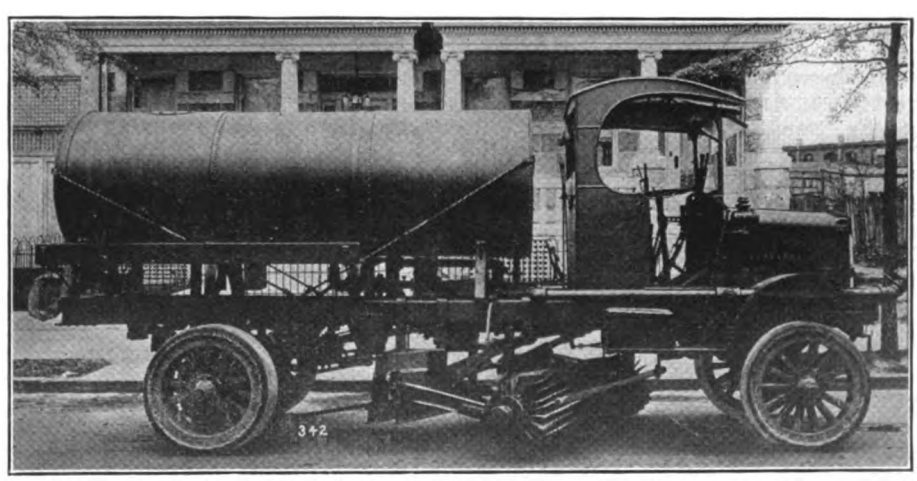
George H. Green, who since 1911 has been connected with the Fifth Avenue Coach Co., New York City, in the capacity of chief engineer, has been promoted to general manager of the concern, which is now operating close to 300 motor busses over the New York City streets.

REPUBLIC TRUCK BRANCH IN CANADA.

The Canadian branch of the Republic Motor Co. is to be located at London, Ont. The trucks are manufactured at Alma, Mich. A. C. Smith of Toronto will be the general manager. A structure to cost $500,000 will be erected and equipped to build trucks.

CONTINENTAL MOTORS RECLAIMING LAND.

The Continental Motors Corporation of Muskegon, Mich., is reclaiming a tract of 35 acres from Muskegon Lake, on which it plans to construct an addition costing about $1,000,000.



A Combination Squeegee and Sprinkler, Mounted on a Brockway 3½-Ton Chassis, a Standard Type of Motorized Street Cleaning Apparatus.

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L-M AXLE CO. TO BUILD CLEVELAND FACTORY.

The L-M Axle Co., Cleveland, O., has been granted a charter by the Ohio secretary of state and plans for a large factory, the building and equipment to cost around $600,000, are being worked out. The company was incorporated with a capital of $1,500,000.

Leo Melanowski is chief engineer and inventor of the double reduction truck axles, which this company will manufacture in quantity. The officers of the company are: Harley E. Shimmins, president; R. L. Quiesser, vice president; James L. Vaughn, secretary, and Louis A. Otto, treasurer.

The axle to be built is claimed by Melanowski to have great efficiency and to have perfect lubrication with a decided saving of weight.

COMPLETION OF INDIANA SILO MERGER.

Consolidation of the Indiana Silo Co., Anderson, Ind., and the Star Tractor Co., Findlay, O., was completed recently at a meeting of the stockholders of the two concerns. The new company is to be known as the Indiana Tractor and Silo Co. Geo. B. Ayers of Anderson and Edgar H. Evans of Indianapolis were elected directors in addition to the members of the board of the Silo company. Officers have been elected as follows: President, W. M. Swain; vice president, Geo. B. Evans; secretary and treasurer, E. M. Wilson; general manager, C. C. McGuire; chief engineer, Paul H. White.

STEWART TRACTOR CO. TO BUILD AT WAUPACA, WIS.

The Stewart Tractor Co., Milwaukee, Wis., organized several months ago with a capital stock of $300,000, by C. C. Wayland of Milwaukee, and associates, has decided to locate its plant and headquarters at Waupaca, Wis., where local capital has guaranteed to take $100,000 interest to meet an equal amount provided by the promoters. The company has taken an option on 44 acres on both sides of the Soo line main tracks in Waupaca.

DETROIT RADIATOR ADDS TO FACTORY.

The Detroit Radiator Corporation, Detroit, Mich., has purchased a factory site on the Grand Trunk Railway and will build a new plant at once. Harry H. Rowe, for 14 years branch manager for the Buroughs Adding Machine Co., has been appointed general manager of the company.

NEW BASIS OF ADJUSTMENT FOR POLACK TIRES.

Polack truck tires are now adjusted on the following mileage basis: Regular type, 10,000 miles; high crown, 12,000. The Polack Tire and Rubber Co., New York City, has been for a number of years past the only solid tire maker allowing a 10,000 mile adjustment.

CLIFTON APPOINTS N. A. C. C. STANDING COMMITTEES.

The following committees have been appointed by President Charles Clifton of the National Automobile Chamber of Commerce to serve for the ensuing year. Very few changes have been made for the policy of the organization is to continue a committee membership so far as this is possible.

Passenger Car Show Committee: John N. Willys, chairman, Willys-Overland Co.; H. G. Root, Westcott Motor Car Co., Harry M. Jewett, Paige, Detroit Motor Car Co.; S. A. Miles, show manager, National Automobile Chamber of Commerce.

Patents Committee: C. C. Hanch, chairman, Maxwell Motor Co.; Windsor T. White, White Motor Co.; C. W. Churchill, Winton Co.; Wilfred C. Leland, Lincoln Motor Co.; Wm. MacGlashan, Studebaker Corporation; Robert A. Brannigan, manager, National Automobile Chamber of Commerce.

Legislative Committee: H. H. Rice, chairman, Chevrolet Motor Co.; D. C. Fenner, Mack Bros. Motor Car Co.; J. I. Farley, Auburn Automobile Co.; J. I. Barrows, Lexington Motor Co.; David Ludlum, Autocar Co.

Highways Committee: R. D. Chapin, chairman, Hudson Motor Car Co.; W. E. Metzger, Columbia Motors Co.; Royal R. Scott, Willys-Overland Co.; S. M. Williams, Garford Motor Truck Co.; Geo. M. Graham, Pierce-Arrow Motor Car Co.; Pyke Johnson, secretary, National Automobile Chamber of Commerce.

Traffic Committee: William E. Metzger, chairman, Columbia Motors Co.; A. I. Philp, Dodge Brothers; F. C. Chandler, Chandler Motor Car Co.; William L. Day, General Motors Truck Co.; Geo. Dickson, National Motor Car and Vehicle Co.; J. S. Marvin, manager, National Automobile Chamber of Commerce.

Electric Vehicle Committee: W. C. Anderson, chairman, Anderson Electric Car Co.; Fred R. White, Baker-R. & L. Co.; H. W. Suydam, Milburn Wagon Co.

Membership Committee: C. W. Churchill, chairman, The Winton Co.; J. Walter Drake, Hupp Motor Car Corporation; Hugh Chalmers, Chalmers Motor Co.

Foreign Trade Committee: J. Walter Drake, chairman, Hupp Motor Car Corporation; Peter S. Steenstrup, General Motors Truck Co.; H. M. Robins, Dodge Brothers; Jay Rathbun, White Motor Co.; E. C. Morse, John N. Willys Export Corporation; J. P. Roberts, Studebaker Corporation; H. B. Phipps, Hudson Motor Car Co.; H. R. Cobleigh, secretary, National Automobile Chamber of Commerce.

Conservation Committee: W. C. Sills, chairman, Chevrolet Motor Co.; G. R. Lippard, Stewart Motors Corporation; M. Cook, Service Motor Truck Co.; F. E. Bradfield, Velie Motors Corporation; C. Baird, Jas. Cunningham Son & Co.

Motor Truck Committee: Windsor T. White, chairman, White Motor Co.; Alvan Macauley, Packard Motor Car Co.; George M. Graham, Pierce-Arrow Motor Car Co.; Victor L. Brown, Sterling Motor Truck Co.; M. L. Pulcher, Federal Motor Truck Co.; R. H. Salmons, Selden Motor Vehicle Co.; D. C. Fenner, International Motor Co.; F. W. Fenn, secretary, National Automobile Chamber of Commerce.

Rural Motor Express Committee: James L. Geddes, chairman, Kelly-Springfield Motor Truck Co.; E. A. Williams, Jr., Garford Motor Truck Co.; O. H. Browning, International Harvester Corporation; A. T. Murray, Bethlehem Motors Corporation; George D. Wilcox, Commerce Motor Car Co.; F. W. Fenn, secretary, National Automobile Chamber of Commerce.

Truck Standards Committee: David C. Fenner, chairman, International Motor Co.; Francis W. Davis, Pierce-Arrow Motor Car Co.; F. A. Whitten, General Motors Truck Co.; B. M. Sternberg, Sterling Motor Truck Co.; F. F. Beall, Packard Motor Car Co.

Hand Book Committee: E. T. Strong, chairman, Buick Motor Co.; F. H. Akers, Reo Motor Car Co.; George A. Kissel, Kissel Motor Car Co.; William T. White, Mercer Auto Co.; Charles Denby, Denby Motor Truck Co.

Truck Committee on Standard Repair Parts and Service Policies: E. T. Herbig, chairman, Service Motor Truck Co.; H. W. Drew, Packard Motor Car Co.; W. M. Ladd, Pierce-Arrow Motor Car Co.; A. B. Cumner, Autocar Co.; W. M. Britton, Republic Motor Truck Co.

NEW MOUNTAIN VARNISH PLANT AT TOLEDO.

The Mountain Varnish and Color Works of Toledo, O., a $1,500,000 corporation, has started work on six buildings which will constitute its new plant. W. W. Mountain and others, who formerly controlled the Flint Varnish and Color Works, Flint, Mich., are in the new company. John N. Willys of the Willys-Overland Co. is also interested.

The buildings will have a total floor space of 200,000 square feet, and will consist of one main building of three stories, a two-story office building and four modern one-story buildings.

HEBRAND COMPANY TO DOUBLE CAPACITY.

The Hebrand Co., Fremont, O., has purchased a 35-acre tract of land on the outskirts of the city on which it will build a plant. Its present works is overcrowded. In addition to the plant, a new club house will be built. The company is making drop forgings for a number of automobile firms. It now employs 500 men and this force will be doubled with the new addition finished.

NOW WESTERN MANAGER FOR THE LOCOMOBILE CO.

J. Murray Page, until recently manager of the Chicago branch of the Locomobile Co. of America, has been appointed western sales manager for the company. He will continue to make his headquarters in Chicago. C. B. Amorous, formerly director of Locomobile sales, succeeds Mr. Page as manager of the Chicago branch.

SELDEN APPRECIATION OF HENRY G. STRONG.

At a meeting of the directors of the Selden Truck Sales Co., at Rochester, N. Y., Aug. 15, a resolution was adopted on the death of Henry G. Strong, a former director and a stockholder of the company and one of the originai incorporators, expressing appreciation of his services and his qualities as an associate.

KELLY-SPRINGFIELD TIRE INCREASES CAPITAL.

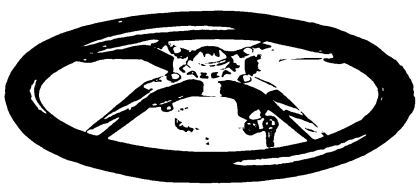
To finance construction of its new plant at Cumberland, Md., the Kelly-Springfield Tire Co., a New Jersey corporation, recently filed a certificate with the secretary of state increasing its capital stock from $13,900,300 to $20,900,300. The new plant, it was stated, will cost approximately $5,800,000.

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New Motor Truck Accessories and Supplies

LAZEAR AUTO LOCK WHEELS.

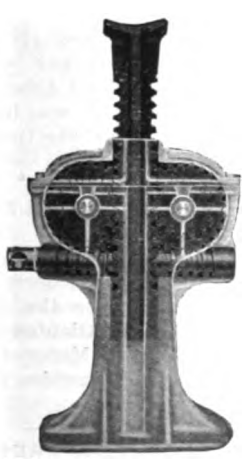
The Lazear Auto Lock Wheel Co., 4101-13 Irving Park Boulevard, Chicago, Ill., manufactures the Lazear Auto Lock for Ford trucks, for which many claims are made. It is simple in construction and can be easily installed in about 10 minutes time by anyone. It has been approved by the Underwriters' Laboratories and is the only lock wheel which locks without the use of a key. It has no lost motion or play, even after a long season



of use. It is fitted with a Corbin locking cylinder that is supplied with two keys which are designed for each particular car, no two locks having keys alike. The wheel has a polished aluminum spider and a walnut finished, corrugated rim. The rim is 17 inches in diameter and is very comfortable for the driver, giving greater leverage and lessening the steering strain. Ball bearings are used in the construction of the lock wheel, which reduces the friction to a minimum.

REES DOUBLE WORM GEAR DRIVE JACKS.

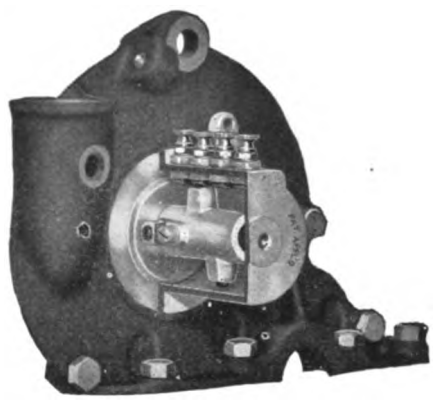
The Iron City Products Co., 7501 Thomas boulevard, Pittsburgh, Pa., is building a new double worm gear drive jack that is especially suited to garage, service station and truck work. The principle of the worm gear is employed



in the construction of this jack, which is claimed to be very powerful. These jacks can be quickly positioned beneath axles and may be operated by a man while standing. They are manufactured in a series of sizes and weights for all classes of work. The manufacturer claims that a child can lift a two-ton load with ease with one of these jacks and that the jack cannot drop under load.

JACK RABBIT DISTRIBUTOR FOR FORD TRUCKS.

The Jack Rabbit Ignition Co., 1062 Palmer avenue, Detroit, Mich., builds Jack Rabbit Distributors, which are designed to take the place of regular Ford commutators. Unlike the Ford commutator there is nothing about the contacts to wear as the brush units break contact while traveling through space. The terminal contacts are a suspended type, attached to the top of the distributor. The wire connections are from the top of the distributor directly over the brush contacts, insuring against accumulations of oil. Jack Rabbit distributors can replace

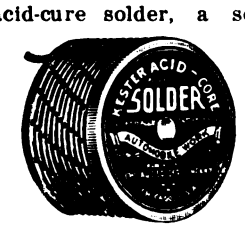


old commutators, the wires being connected to the terminals marked one, two, three and four. Then turn the engine until the old roller brush points down; remove it and with the engine in this position slip the Jack Rabbit brush on the camshaft and tighten the set screw securely into hole on the camshaft. Use the bolt and bushing furnished for adjusting the Jack Rabbit body to the engine. If the spark is timed too low this may be corrected by shortening the spark rod by bending.

The manufacturer claims that with a Jack Rabbit Distributor the wires will be kept free from oil and ignition troubles will be reduced.

KESTER ACID-CURE SOLDER.

The Chicago Solder Co., 218 North Union avenue, Chicago, Ill., manufactures Kester acid-cure solder, a self-fluxing



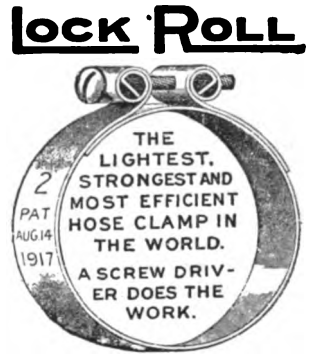


Kester Acid-Core Wire Solder

wire type. The solder (strictly tin and lead) is a hollow wire filled with a soldering flux. No additional soldering flux, paste or salts is required. The manufacturer claims it will solder any metal except aluminum and is especially suitable for automotive repair work. It is said to be cheaper to use than solder wire or bar solder, as no time is lost in preparing, hunting or applying the flux. It is specially adapted to repairing radiator leaks, attaching spark plug terminals, soldering cracked fenders, gasoline pipe and tank connections, speedometer flexible shaft tubing and general garage work.

LOCK ROLL HOSE CLAMP.

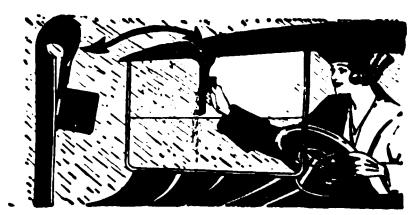
The Federal Tin Co., Charles and Barre streets, Baltimore, Md., manufactures a unique hose clamp that is shown in the accompanying cut. Of all of the splendid features of this clamp, one that stands out the strongest is the lock nut



arrangement. This device eliminates the nut so commonly used on the ordinary clamp, and at the same time is guaranteed by the manufacturer to be non-stripable and vibration proof. Its application is simple and it is adaptable in every case where a tight connection is absolutely necessary.

KLEAR-SIGHT WINDSHIELD CLEANER.

The Alcemo Manufacturing Co., Newark, N. J., is marketing a windshield cleaner that is known by the trade name of Klear-Sight Cleaner. The manufacturer claims that this device is superior to anything sold for the purpose. This is largely due to the drawn steel spring



welded to the iron parts. This is made of a special grade of steel, making possible an alignment that insures a uniform contact of the cleaner with the glass, which is absolutely necessary to get good results. It not only removes rain, mist or snow from the glass, but leaves it clean and clear.

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WILL MANUFACTURE DUESENBERG ENGINE.

The Rochester Motors Co., Rochester, N. Y., has acquired the manufacturing and sales rights from the Deusenberg Motors Corporation for the model G four-cylinder engine, manufacture of which was held up by war work. This is a four by six-inch engine, developing about 75 horsepower. The Rochester company will manufacture and sell it under license from the Duesenberg company.

NOW CADILLAC ADVERTISING MANAGER.

John Cleary, formerly with the Cadillac Philadelphia branch, is now advertising manager of the Cadillac Motor Car Co., Detroit. He succeeds Leo N. Burnett, who resigned to handle the advertising of the new company being formed by D. McCall White. Mr. Cleary handled the Cadillac advertising while Mr. Burnett was in the army.

LARGE SALES GROWTH FOR E. & J. COMPANY.

Sales of the Edmunds & Jones Corporation, for the first half of the present year are reported at $2,112,837, as against $1,579,030 for the corresponding period in 1918. June sales alone are placed at $435,434, in comparison with $258,415 for those of the same month a year ago.

NEW MANAGER FOR THE UNITED SERVICE CO.

F. G. Adams has been appointed manager of the Cleveland branch of the United Motors Service, Inc., of Detroit. Prior to his connection with the United Motors Service Mr. Adams was instructor at the Liberty Engine School of the Bureau of Aircraft Production.

NEW DISTRIBUTION MANAGER.

Walter G. Jacob is the new distribution manager of the Bearing Service Co., Detroit, Mich. He will have charge of service sales and will direct both sales and advertising departments. He was formerly a lieutenant in the ordnance department of the army.

COLE WITH THE ALBEE CO.

Walter C. Cole, former secretary of the Detroit Board of Commerce, has returned from army service and joined the staff of the William M. Albee Co., Detroit, sales and advertising specialists for trucks and passenger car companies.

H. G. Jackson, formerly Detroit representative of the Wire Wheel Corporation of America, has succeeded Ralph D. Webster as general sales manager of that concern.

The Waterloo Auto and Supply Co., Waterloo, Ia., has contracted to distribute Transport trucks in 25 counties in northeastern Iowa.

E. & W. MANUFACTURING CO.'S PLANT TO BE ENLARGED.

The E. & W. Manufacturing Co., 325-333 Oregon Street, Milwaukee, Wis., is building a two-story addition, 50 by 100 feet, to relieve the crowded condition of its present works, devoted entirely to the production of commercial car attachments for passenger car chassis. Frank J. Edwards, formerly Kissel distributor and now representing the Dodge, founded the concern about five years ago, since which time it has become one of the largest makers of this class of automobile equipment in the Middle West.

ASHLAND TIRE CO. TO BUILD FACTORY.

The Ashland Tire and Rubber Co., Cleveland, O., has announced that a modern tire plant will be built in Ashland, O., at a cost of $150,000. The Ashland company is one of the latest firms to enter this industry. It is incorporated for $1,000,000 and purposes the manufacture of cord and fabric tires and "Purgum" inner tubes. Later it plans to add a line of mechanical goods.

DYSDALE JOINS D. McCALL WHITE.

K. P. Drysdale, former advertising manager for the Cleveland Tractor Co., Cleveland, O., and previous to that time with the Cadillac Motor Car Co., is to join D. McCall White as advertising manager of the automobile company that White is organizing.

CASH LEAVES WISCONSIN PARTS COMPANY.

L. W. Cash, for the past two years purchasing agent of the Wisconsin Parts Co., formerly the E. B. Hayes Machinery Corporation, Oshkosh, Wis., has resigned his position to take effect Sept. 1.

McMULLEN MACHINERY CO. EXPANDS.

The McMullen Machinery Co., Grand Rapids, Mich., has increased its capital stock from $30,000 to $75,000. Of this stock $25,000 is eight per cent. preferred, redeemable in 1929.

U. S. RUBBER TO OPERATE IN CANADA.

The United States Rubber Co. of Montreal has been recently organized with a capital stock of $20,000,000 and the officers elected. C. B. Segor has been elected president.

DEAN OF AMBU ENGINEERING INSTITUTE.

David Penn Moreton, associate professor of electrical engineering at the Armour Institute of Technology, has been made dean of the new Ambu Engineering Institute, Chicago, Ill.

The Milburn Wagon Co., Toledo, O., has added 40,000 square feet of floor space to its present factory.

DEALERS WANT BETTER FREIGHT SERVICE.

The Waterbury Auto Dealers' Association, Waterbury, Conn., has elected a committee to secure better facilities for unloading automobiles at the freight yards in their city. The committee is to confer with the railroad officials and endeavor to make arrangements for more satisfactory unloading service. The dealers of Waterbury and vicinity complain that at present they have no show whatever in unloading their cars.

KELLER JOINS BUCK & HAMMESFAHR.

Ralph E. Keller has joined Buck & Hammesfahr, advertising agents, New York, Chicago and St. Louis. Mr. Keller has been associated with the advertising of Willys-Overland, Peerless and Cole cars, Stewart Warner speedometers, Republic and Garford trucks, Federal tires, Standard parts, etc.

MILWAUKEE FOUNDRIES INCREASE CAPACITY.

The A. E. Martin Foundry Co., Milwaukee, Wis., which specializes in cylinder and piston castings, is spending $200,000 to $250,000 in increasing the shop capacity 100 per cent. The Jaeschke Bros. Foundry Co. is effecting a 65 to 75 per cent. increase at a cost of $175,000.

OFFICES OF PNEUMATIC TOOL IN NEW YORK.

The Chicago Pneumatic Tool Co., Chicago, Ill., will move its general offices to New York, into the building it is erecting at 6-8 East 44th Street, in 1920. Sales and service organizations will be maintained in Chicago.

ADAMS PRESIDENT OF PRODUCTION CASTING CO.

W. O. Adams has been elected president and general manager of the Production Casting Co., Ann Arbor, Mich. A meeting of the directors was held recently at which Mr. Adams' election was confirmed.

NEW MERGER FOR BETHLEHEM MOTORS.

A new corporation has been formed in Delaware to take over the Bethlehem Motor Corporation of Allentown, Pa., and the North American Motor Co., Pottstown, Pa. The plan provides for raising $100,000 cash.

NEW MOLINE PLOW PRESIDENT.

George N. Peck will become president and general manager of the Moline Plow Co., Moline, Ill., on Jan. 1, succeeding President Allen.

On July 1 the Acme Motor Truck Co., Cadillac, Mich., began operating on a schedule of a nine hour day, the employees receiving 10 hours pay.

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CANADIAN PLANTS NEAR COMPLETION.

The construction work at the plant of the Motor Products, Ltd., at Walkerville, Ont., the Canadian branch of the General Motors Corporation, is proceeding at such a rate that production will be commenced on a large scale by the end of this year. A company official stated that 2000 men would be employed by Jan. 1. Export of motor cars by this company is included in the program. It is proposed to ship cars to Great Britain, to take advantage of the preference on Canadian made automobiles. Axles and transmission shafts will be made at the Motor Products plant.

NEW MEMBERS ON THE NOBLE TRUCK BOARD.

The Noble Truck Corporation, Kendallville, Ind., recently elected four men formerly with the Gary Motor Truck Co., Gary, Ind., as officers of the Noble company. L. W. Nichols, formerly the Gary secretary, will be general manager; C. W. Cole, formerly general manager of the Gary company, will hold a similar position with the Noble company; J. W. Baird, sales manager of the Central States, will fill a similar position, and E. M. Sharp, former Gary production manager, will serve in that capacity for the Noble company.

TWO NEW JUMBO TRUCKS TO BE BUILT.

The Nelson Motor Truck Co., Saginaw, Mich., announced recently changes in construction along slightly heavier lines, making possible an increase in the rating of Jumbo Model D from 4000 to 5000 pounds. Several equipment improvements also were announced, including installation of a new lubricating system. The chassis price has been increased from $2500 to $2700.

Two new Jumbo models will be announced soon, to be 1½ and 3½-ton sizes, each to be supplied in three wheelbase lengths.

NEW ADDITION TO OHIO BLOWER PLANT.

Contracts have been let and work started on a $200,000 addition to the Ohio Blower Co. plant, Cleveland, O. The building will be L shape, 110 by 60 by 80 by 160 feet, four stories high, of reinforced concrete. It is expected to be completed within 90 days and will be used for the manufacture of motor car bodies.

NEW REO SALES PROMOTION MANAGER.

The Reo Motor Car Co. announces that Walter K. Towers, formerly publicity director and editor, has assumed charge of the sales promotion division of the truck sales division of that company. He was editor of the American Boy and later of Milestones.

KLEIN-EXEL HEADS ALL-AMERICAN TRUCK CO.

The following officers were elected at a recent meeting of the board of directors of the All-American Truck Co., Chicago, Ill.: President and general manager, Paul Klein-Exel; vice president, in charge of sales and engineering, Otto Bruenauer; vice president in charge of manufacturing, R. J. Sutton. Mr. Klein-Exel was founder and organizer of the company and up to now has acted as chairman of the board of directors. He succeeds R. H. Spear, resigned, as president.

Mr. Bruenauer, who also replaces Mr. Spear on the board of directors, formerly was in the United States Ball Bearing Co., having resigned following changes in the organization attendant on the death of W. H. Strom.

In preparation of occupancy of the new factory which is under construction and which will make possible increase of production, E. A. Paepper, formerly with Mercedes and later with Mercer and Republic ompanies, becomes chief engineer of the All-American. H. H. Howe, formerly with the Maxwell Motors Co., becomes sales manager, and W. Maun, formerly with the Republic Motor Truck Co., purchasing agent.

The increase of sales of the All-American truck not only has made necessary the construction of the new factory, but in addition a very material increase in the force of salesmen is now in progress. The country is being divided into zones with factory representatives in charge, and they in turn are installing their own separate organization.

TRAFFIC CO. TO MAKE RADIATOR CORES.

A complete radiator core manufacturing plant installed by the Traffic Motor Truck Corporation, St. Louis, Mo., at its new factory, was placed in operation recently. The plant will have a capacity of 50 complete radiator cores a day. The department was designed and installed by S. H. Dorsey, chief engineer for the corporation, the unit system of manufacture being employed.

NEW AGENT FOR PHILADELPHIA BATTERY.

The Battery Exchange, Inc., St Louis, Mo., has taken the agency for the Philadelphia storage battery for Eastern Misrouri, Southern Illinois and five counties in Kentucky. The branch is in the Coliseum, but will be removed to a down town location, with George Lee Barret as manager.

RHODES APPOINTED UNIVERSITY ENGINEER.

Leroy Rhodes has been appointed engineer in charge of farm machinery and farm buildings in the University of Nebraska department of agricultural engineering. He returned recently from 10 months' service as a lieutenant in the aviation section in France.

NEW STOUGHTON TRUCK IN PRODUCTION.

The Stoughton Wagon Co., Stoughton, Wis., one of the oldest heavy duty and farm wagon manufacturing concerns in the United States, is engaging in the production of motor trucks, to be marketed under the trade name of "Stoughton," in 1½, 2 and 2½-ton capacities. The first model, a 1½-ton machine, was completed recently and is being given rigorous tests. The present plant is being enlarged by several additions to provide new facilities for motor truck assembling and machine work and it is intended that eventually the farm wagon department will take up only a small part of the factory. F. J. Vea is president and general manager of the company.

SIMMS ENLARGING MAGNETO FACTORY.

Increasing demands for its magnetos has made necessary the Simms Magneto Co., East Orange, N. J., enlarging its present factory. A concrete addition will be built, 152 feet long by 66 feet wide, with walls of sufficient strength to carry three more stories, should future expansion warrant building them. The plant will be completed in 90 days and much new automobile machinery will be installed. Six years ago the Simms company employed 125 workers, this number being increased to the present force, which numbers 600 employees.

ERIE MOTOR TRUCK CO. IN NEW HANDS.

Sale of the entire business and all outstanding stock of the Erie Motor Truck Manufacturing Co., Erie, Pa., a $50,000 corporation, has been made. New officers of the company, elected at a recent meeting of the board of directors, are: J. J. Harvey, president; H. C. Liebau, vice president; J. H. Rastatter, secretary and treasurer. Complete control of the company and all of its business and assets passes to these officers and their associates.

NOW SELLING THE SAMSON TRACTOR.

Kenneth V. Hook has joined the Samson Tractor Co.'s sales force to represent Southern Illinois, Western Kentucky, Southern Missouri and Arkansas, with headquarters at St. Louis. He was formerly salesman for the Rock Island Plow Co. and later district sales manager for the Cleveland Tractor Co. at Atlanta, Ga.

NEW BESSEMER TRUCK REPRESENTATIVE.

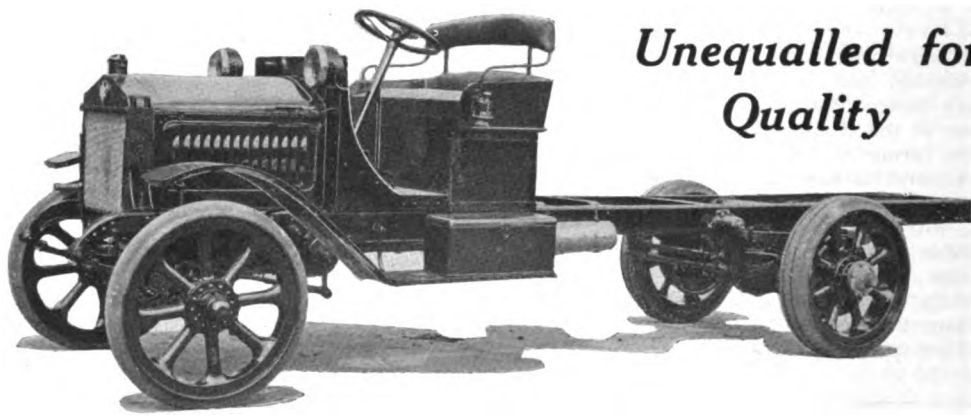
W. B. Roberts, Jr., recently associated with the Dyer distributing agency of the Republic Truck Co., at Salina, Kan., has been made southwestern factory representative of the Bessemer Motor Co.

Fuller & Sons Manufacturing Co., Kalamazo, Mich., announce that F. George Walker is in charge of the newly opened New York office of the company.

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WALKER-JOHNSON TRUCKS

2½ TON CAPACITY CHASSIS



Unequalled for Quality

The Walker-Johnson Truck Co. was organized to build the highest grade truck that skilled engineering can produce. Its engineers have designed a chassis that embodies every quality that truck experience and transportation knowledge can demand.

Walker-Johnson trucks represent not one man's knowledge, but the best of all engineering.

Even a glance at the specification will evidence the quality of construction units. These components are assembled to afford the greatest measure of simplification, accessibility and economy of maintenance and operation.

The builders of Walker-Johnson trucks have been identified with the industry since its inception. They have developed with it. Their choice is shown in the following

Specifications

Engine: Buda four-cylinder, 4¼x5½, L-head; 3 main bearings, 3-point suspension; 28.9 horsepower.
Lubrication: Force feed.
Cooling: Pump and tubular radiator.
Carburetor: Zenith.
Ignition: Eisemann magneto.
Governor: Pierce.
Clutch: Multiple dry disc.
Transmission: 4-speed, mounted amidships.
Universal Joints: Spicer.
Drive: Hotchkiss, improved.
Rear Axle: Full-floating, worm drive, David Brown gear.
Front Axle: I-beam.
Springs: Semi-elliptic, steel alloy, heat treated, front 39½x3 in.; rear, 52x3½ in.
Steering Gear: Ross, B. L. model.
Wheelbase: 150 in.
Tires: 36x4 in. front; 36x8 in. rear.
Gasoline Feed: Gravity, pressed steel tank, 25 gallons capacity.
Chassis Weight: 4600 lbs.
Speed: Governed to 16 miles.

Equipment: Driver's seat, fenders, running boards, gas dash lights, oil tail light, complete set of tools, tool box, jack, Prest-O-Lite tank.

Walker-Johnson Truck Company
Woburn, Massachusetts

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 9. PAWTUCKET, R. I. SEPTEMBER, 1919.

MINNESOTA FARMERS SEE NATION'S GREATEST TRUCK PARADE

Demonstration in Connection with State Fair at Minneapolis to Promote Highway Haulage with More Than 1300 Machines Is Witnessed by Million People

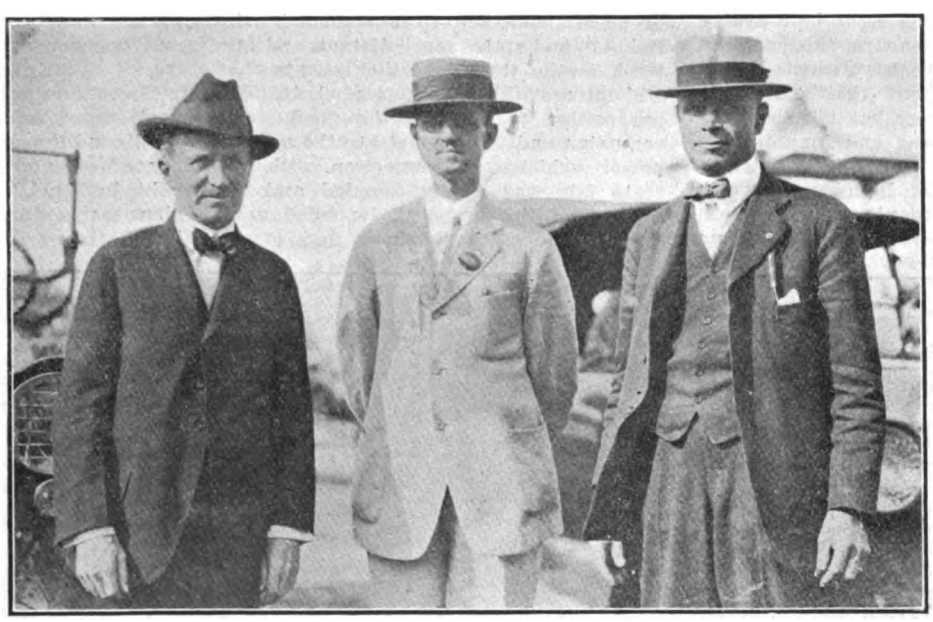
MINNEAPOLIS, MINN., Sept. 2.—Never before in the world was beheld such a spectacle as was witnessed in the streets of this city and St. Paul and at the State Fair grounds Labor Day by what is conservatively estimated as more than a million people. It was the parade of the largest number of power freight carrying vehicles ever assembled, in peace time certainly, and without much doubt it was a better illustration of the possibilities of highway haulage than was the famed endless chain of trucks that supplied the French army that for months defended Verdun.

A big procession was promised the people by the State Fair Board, which wanted an attraction that would have unusual interest, and this promise was reiterated in all sections of the state for several weeks, so the people were convinced that their expectations would be realized, but no one believed that they would see 1386 different trucks in a single procession.

This number is specified by the committee that organized the parade, but the State Fair board maintains that the number exceeded 1400, and there is hardly a citizen of Minnesota who saw the parade who is unwilling to take either count and be perfectly satisfied, for trucks were seen to pass for what was seemingly an interminable period.

And just as evidence that the parade was seen by a record making throng the State Fair board has placed the number officially within the fair ground as 201,600, which is claimed to be the largest number ever known to be in attendance at an exhibition of this kind, exceeding by something like 125,000 the records of other state fairs.

And as a matter of fact there was no other event of the day that was worthy of comparison with the parade. It was unusual and it served more than one purpose. In fact, the interest manifested demonstrates unquestionably that the entire Northwest is intensely concerned in highway transportation, and this means in every phase—in power vehicles, of course, and in the construction and maintenance of good roads.



The State Fair Executive and His Guests, from Left to Right: H. S. Firestone, President, Firestone Tire and Rubber Co.; Thomas H. Canfield, Secretary and General Manager, State Fair Board; Lieut. Gov. Frankson of Minnesota.

One will assume that a power truck is commonplace and mechanically is reasonably understood; that it is admittedly practical and economical, and that it may be finished and decorated so it will be sightly, but as a subject of especial interest there must be something more than the truck itself to impel the attention of the people.

There is no question, however, of what the people of the Northwest—and Minneapolis and St. Paul are regarded as their metropolis—now think of power trucks. They believe that there are innumerable limitations to railroad expansion, and there are practically no limitations to truck transportation.

Now Is the Time to Build Highways.

They know that either under government or private management that the extension of railroads will never again be

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speculative. By this is meant that the railroads will not build branches or increase mileage unless there is assurance of sufficient business to justify the investment. At the other hand they are aware that the construction of highways is cooperative endeavor in that each will share in the use of them for business or for recreation, and that wherever roads are improved there will be enhanced values of property and direct state and municipal benefit, rather than the gain of the comparatively few who own stock in the railroads.

There is good reason for this belief, and it is founded upon uncontrovertible facts that have been presented and demonstrated to the public. The people of Minnesota and the Northwest realize that if they want to control transportation they must turn to road building and road vehicles, and they know that the people of the nation and of all other states feel as they do and are interested in the same kinds of projects.

Want to Issue $100,000,000 Road Bonds.

There is a very great force in this desire for internal development that was given its first direct manifestation in Minneapolis, and it is directed with the object of crystalizing the sentiment of the people on a $100,000,000 state bond issue for the improvement of highways. This proposition will come before the electors of the state in November of next year and the promoters of it have organized a campaign that will have little if any opposition.

From one point of view it may be termed a good roads movement, but as a matter of fact it means much more. Instead of building highways to be used by passenger cars of residents, to attract tourists from other states, to be a source of recreation and pleasure, the business possibilities have been presented and every logical argument that will have weight with the voters has been submitted through the press and innumerable channels.

The promotion of highway improvement is well nigh unanimous. There is no opposition whatever, and there is no criticism of the amounts that are proposed shall be spent. For instance, a $100,000,000 bond issue, on which interest must be paid as well as principal, which means a total expenditure of at least $125,000,000, is accepted with no remonstrance from taxpayers, although they know that they must eventually provide the cash.

Enthusiastic "Ship-by-Truck" Campaign.

Just now the Northwest is at the height of a campaign to promote highway haulage, and there is a "ship by truck" movement that is being promoted by various organizations and innumerable individuals. This is intended to educate all business men and all who patronize them to convey all commodities by power vehicles wherever possible.

It was the uniting and the cooperation of those interested in better highways and truck haulage that brought about this wonderful parade, for it was a demonstration first of the number of trucks in use, and secondly it established the fact that the truck owners as business men were keenly alive to the possibilities of road transportation.

The State Fair is one of the main events of the year in the Northwest, and it was begun Aug. 30 and will continue the remainder of this week. It was originally devoted principally to display of agricultural products and various competitions, but it has increased to such proportions that the automotive department alone is comparable with the annual exhibitions in some of the large cities.

All Campaigns Boomed Fair Week.

And this great fair draws to Minneapolis and St. Paul each year hundreds of thousands, from Wisconsin, the Dakotas and states more distant, and fair week is the time for other events that will interest the people as a whole. The proposition to promote the good roads campaign and to demonstrate the uses of power vehicles in connection with the state fair was wisely founded and the success of the proposal depended upon the attitude of the business men of the Twin Cities with reference to participation.

The governing board of the Minnesota State Agricultural Society was enthusiastic and the organization of the parade was delegated to a committee of which P. M. Gunsaulus, manager of the "Ship-by-Truck" of the Firestone Tire and Rubber Co. was chairman. The committee did its work wisely and well and in its local campaign for enlisting the business men has the cooperation of the daily press and the bureau of publicity of the agricultural society, and the event was heralded throughout the Northwest and because of the interest created it was fixed for Labor Day.

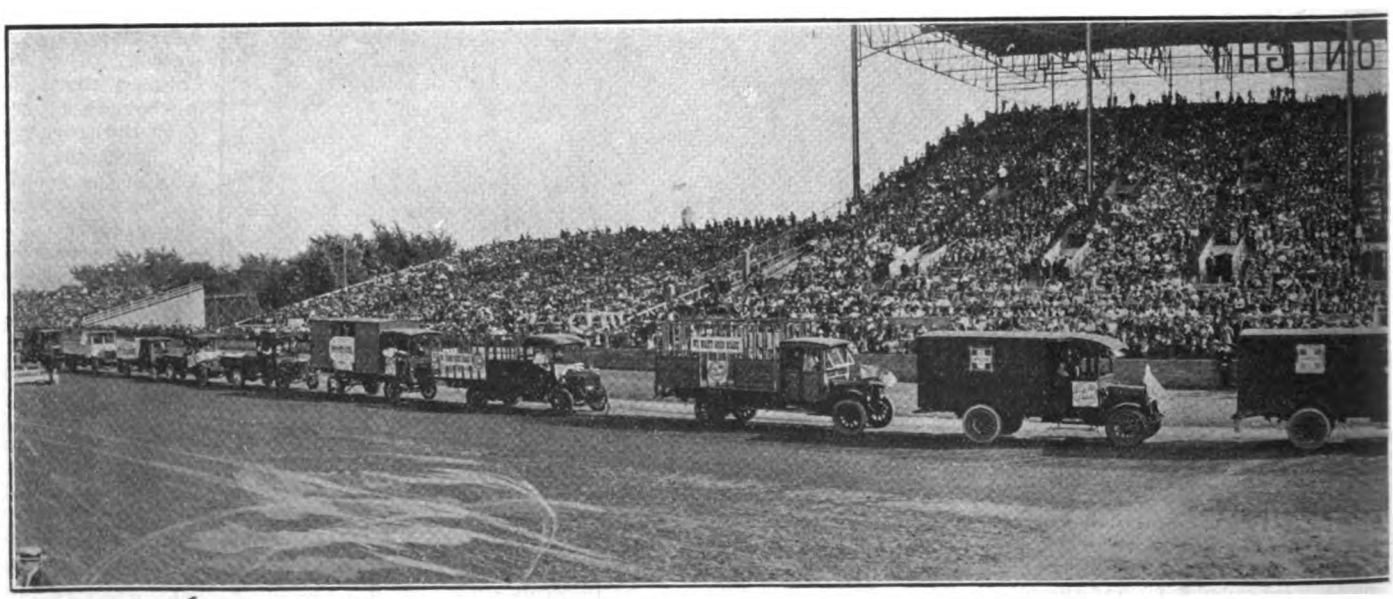
Undertaking of Big Proportions.

Those who have had experience in organization can understand that the committee had an undertaking that was quite beyond similar events in magnitude, and besides there was need of good publicity that would convince the business men. First the committee was divided into Minneapolis and St. Paul sections, with L. A. Brown as chairman of the latter, and then all the truck and automobile dealers were urged to assist these committees.

The committee decided to have a "good roads banquet" the evening of Labor Day at the Hotel Saddisson, and to invite Gov. Burnquist and the officials of the state and the two cities, and other well known men, the dinner to be open to such business men as cared to be identified with the two-fold purpose of the committees.

The belief was that there should be some demonstration of the means of transportation that had been used in bygone days, and so a little section of the parade was turned over to a committee on "transportation evolution" to organize.

Those who were to parade their trucks were urged to have them clean and in good condition so far as appearance was concerned, and to decorate them with "Ship-by-Truck" banners and appropriate signs suggesting road building and its benefits.



Panoramic View of the Largest Parade of Power Trucks the World Has Ever Known Passing the Grandstands at the Minne Witnessed by a Million Persons, 201,600 of Whom Were Assem

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Parade in Two Cities.

The plan adopted by the committee was to have the trucks in two divisions, those from Minneapolis and those from St. Paul, and to have separate parades through each city, and the two processions to meet at the State Fair grounds and unite and circle the mile racing track in sight of the grandstands. This necessitated two separate committee organizations so far as each local parade was concerned.

In addition to the parade preparations there was the organization of the two other campaigns. Both of these were promoted vigorously by the newspapers of each city and each of these papers issued special editions dealing principally with shipping by truck and urging the voters to approve the so-called Babcock amendment to the state constitution.

How Truck Men Helped with Publicity.

The "Ship-by-Truck" bureau maintained by the Firestone Tire and Rubber Co. had previously been actively engaged in interesting the business men of the Twin Cities to use power trucks wherever possible. It had planned 13 different routes, 10 of these from Minneapolis, to large towns and cities within a considerable radius, and suggested that these were the best thoroughfares for truck haulage as follows:

Route No. 1—St. Paul, Minnetonka and White Bear.

Route No. 2—Excelsior, Hopkins and Lake Minnetonka points.

Route No. 3—Robbinsdale and Maple Grove.

Route No. 4—Robbinsdale, St. Paul, White Bear and New Brighton.

Route No. 5—Eden Prairie.

Route No. 6—Wayzata, Orono, Long Lake, Maple Plain and Delano.

Route No. 7—St. Paul, White Bear, Bald Eagle, Wayzata, Long Lake, Maple Plain, Orono and Delano.

Route No. 8—Anoka, Ossee, Champlin and Robbinsdale.

Route No. 9—Elk River and Dayton.

Route No. 10—Albert Lea and intermediate points.

Route 11—St. Paul, Minneapolis, Rosemont, Farmington, Castle Rock and Northfield.

Route No. 12—Albert Lea, Owatonna, Geneva, Clark's Grove, Glenville, Gordonville, Minn.; Northwood, Kennett, Manly and Mason City, Ia.

Route No. 13—Hamel, Loretto, Beckford and Buffalo.

Wherever trucks were dispatched over these routes they bore the banners of the State Fair, the proposed parade and suggestions for the guidance of voters with reference to the needs of good roads. Posters, stickers for stationery and every device that would attract attention to the parade and what it represented to the people were used.

The result was that Minneapolis was thronged as never before, and the statement that a million people witnessed the parade in the two cities and at the State Fair is justified by fact.

Many Prominent Men Were Guests.

The committees invited guests, beginning with Gov. Burnquist, United State Senator Knute Nelson, state and city officials and T. H. McDonald, chief of the Bureau of Public Roads of the Department of Agriculture, and the officers of the different associations devoted to promotion of power vehicle use.

At noon Labor Day there was a luncheon at the Minneapolis club for the committee and the guests. In connection with this were informal talks, all of which were in encouragement of the main objects of the demonstration.

Then came the parade, which was made through the "Loop," or the principal streets of Minneapolis. It was headed by Katherine B. Henslar's World Liberty Band, the car of the chief of police of Minneapolis, a police motorcycle squad, and then the cars in which Gov. Burnquist, Secretary of State Julius Schmahl, Mayor J. F. Meyers, Senator Nelson, C. M. Babcock and H. G. Davis of the State Highway Commission, T. H. McDonald of the Bureau of Public Roads, Harry G. Davis, secretary of the Minnesota Highways Association, Senator W. F. Brooks and members of different organizations represented by the committees.

Route of March 20 Miles Long.

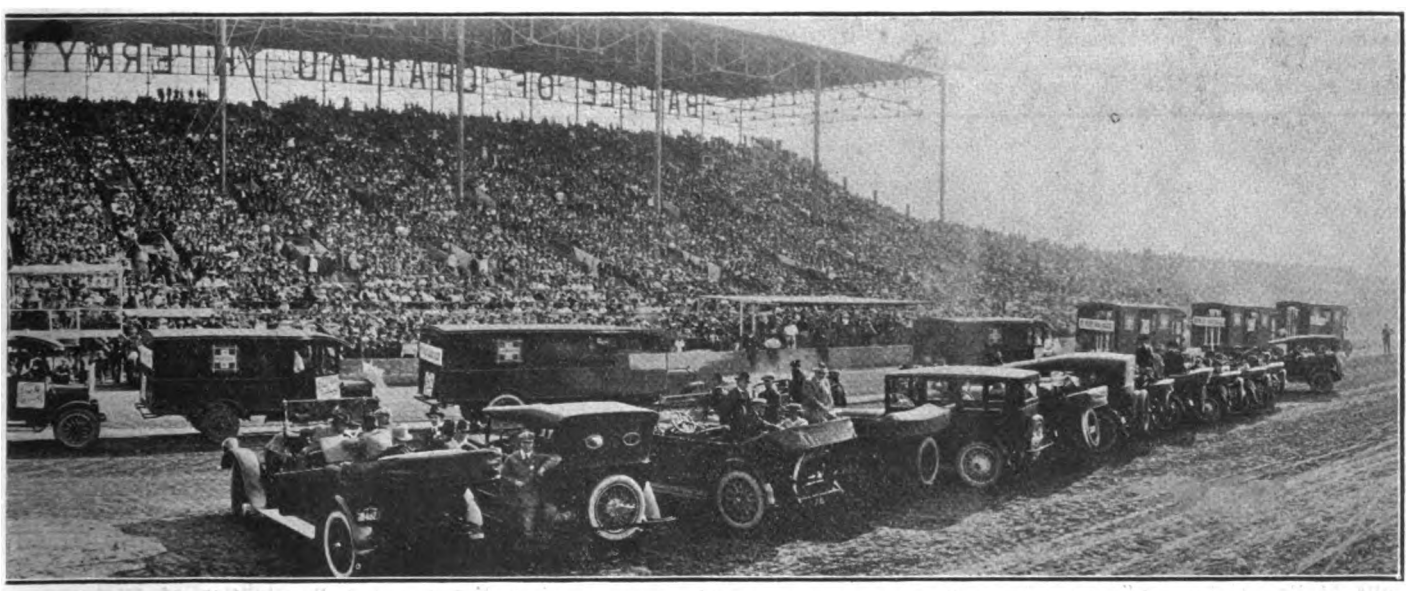
The Minneapolis division was mobilized in 12 squadrons and the route covered was 20 miles. The division was made up of approximately 900 trucks. The St. Paul division included nearly 500 machines. In the Minneapolis division were five bands and the St. Paul division three. The Minneapolis route was covered in about an hour and a half and it ended at the Como and Phalen avenue gate of the fair grounds, where it was met by the St. Paul section. At this point the procession was joined by the division representing the evolution of transportation.

The streets of both cities were filled during the parade, despite the length of the line, and there was much interest and not a little amusement created by the originality of some of the signs displayed on the trucks.

There was in the parade seemingly all types of bodies ever built, and the vehicles ranged from the converted passenger car used for package delivery to the largest trucks, some very old and some in service for the first time. Some were dingy with the wear of long use and others were bright in the splendor of paint and varnish and decorations.

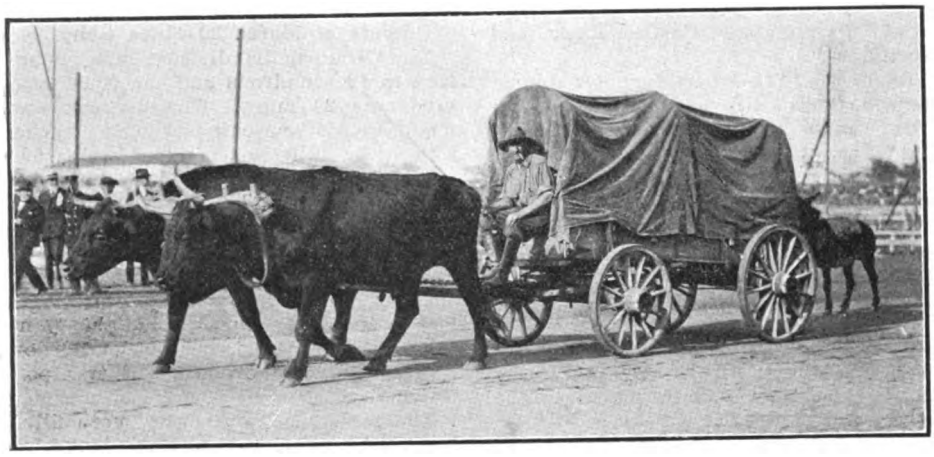
All Types of Trucks in Parade.

The trucks were grouped as to body types only, as when a fleet of standardized machines was in line, but there was a good deal to educate the spectators as to the truck utility. The divisions included fire apparatus, such as engines, combinations, hose trucks, water towers, repair trucks, municipal equipment, such as sprinklers, flushers, street cleaning trucks, ash trucks, garbage trucks; contractors' trucks with wide wheels and dumping bodies and hoists, furniture vans, laundry trucks, milk trucks, coal trucks, lumber trucks, department store and special store trucks, ice cream trucks, market trucks, bottle trucks, tractors and trailers and tractors and semi-trailers, tractors and trailer trains, in fact almost every branch of industry and trade was represented. Some of the trucks were loaded with distinctively marked products, several were freighted



sota Fair at Minneapolis on Labor Day—The Procession Consisted of 1386 Trucks and Was More Than 10 Miles Long—It Was bled at the Race Track, on Which the Line of Machines Is Moving.

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And in Contrast with the Trucks Was Paraded an Ancient Prairie Schooner, Drawn by a Yoke of Oxen and with a Saddle Horse Led Behind, the Traditional Transportation Equipment of the Sturdy Pioneers of American Civilization and Industry.

with farm tractors and practically every one was identified so that its owner was known. One truck hauled a train of six animal wagons to demonstrate that the use of such units was practical. One trailer train of six units carried a big company of Boy Scouts.

The trucks displayed signs or legends, most of them suggesting the results that would obtain with the improvement of the highways. One of these was

"Kill the High Cost of Living with Good Roads."

On another was a sign that informed the spectators

"Good Roads Mean Better Farms."

And one truck showed the inscription

"Half the Potatoes and Other Farm Perishables in Minnesota Are Lost for Lack of Transportation."

There were no criticisms in these signs; just presentation of facts that are common knowledge and which cannot be too strongly impressed upon the public.

The Evolution of Transportation.

The parade entered the track of the fair grounds and after passing the grandstand the cars containing the officials countermarched so that the line could pass in review. The movement of the machines was slow and for an hour and a half the trucks rolled along, passing out of the track and the grounds to be released from the jurisdiction of the committee.

And at the rear of the line came one of the most interesting of the divisions, this being led by a horse drawing an Indian drag (two poles with one end of each lashed to a surcingle and the other ends dragging, with the load tied between the poles); pack horses and mules, a prairie schooner drawn by a yoke of oxen with a saddle horse hitched at the rear, a stage coach with some excellent imitations of cowboys, a buckboard, a buggy, a democrat wagon, an ancient cab, various type of barouches and, of course, the inevitable horse drawing all these. And last in the line was what appeared to be the largest truck that was ever seen in Minneapolis.

Day Ended with Good Roads Dinner.

The final event of the day was the "Good Roads Dinner" in the "Gold Room" of the Hotel Hadisson, at which 300 persons were present. The company included state and city officials and prominent business men, Mayor Meyers of Minneapolis, Mayor Hodgson of St. Paul, Senator W. F. Brooks, H. S. Firestone, T. H. McDonald of the Bureau of Good Roads and State Highway Commissioner C. M. Babcock being among those present.

The speakers included Mr. McDonald Mr. Firestone, Mr. Babcock and Harry G. Davis, secretary of the Minnesota Highways Association, and the toastmaster was F. K. Starbird, district manager for the Firestone Tire and Rubber Co.

There was general discussion of policies that should be established to promote public sentiment and there was no division of opinion, but a desire to crystalize what would be acceptable to the people as a whole. The policies that were approved were as follows:

"Support of a system of truck service linking Minneapolis with the entire country."

"Indorsement of movements designed to foster good road building in Minnesota."

"Active participation in all matters affecting state development."

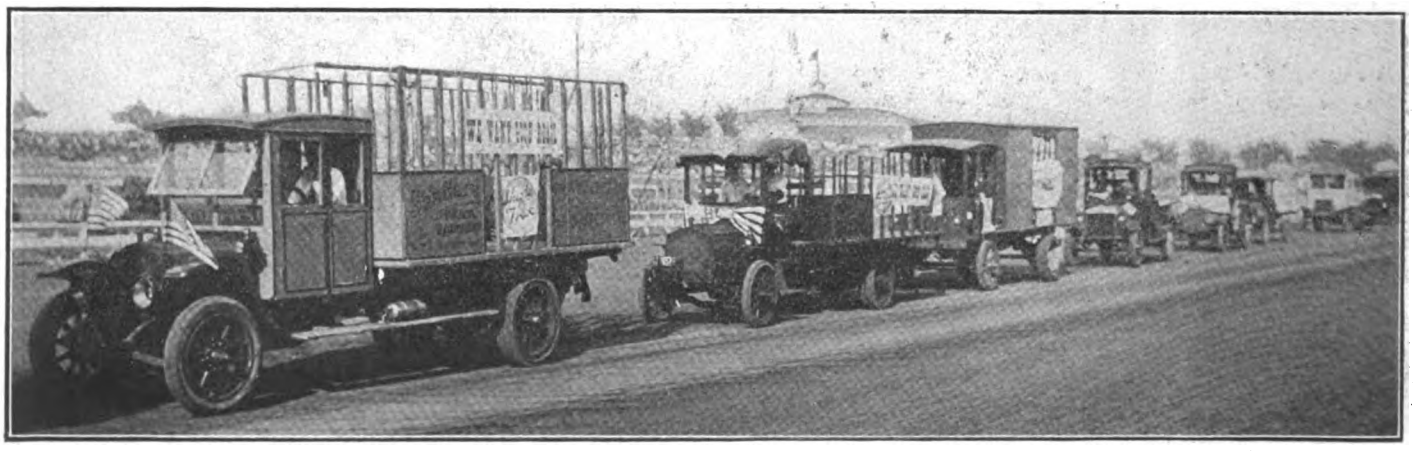
In these politics are forgotten. There will be but one object for all, and that is to promote truck transportation for every practical purpose, and this can only be done by educating the people. Those at the dinner were unanimous in their belief in the future of highway transportation, and as sincere in their conviction that it will be the largest factor for development the state has ever known.

MOTOR ASSOCIATIONS TO CO-OPERATE.

A co-operative conference committee on legislation has been formed by five national automobile and trailer associations of the country, with headquarters in New York. The organizations represented, in addition to the Chamber of Commerce, are the National Automobile Dealers' Association, the Motor and Accessory Manufacturers' Association, the American Automobile Association and the Trailer Manufacturers' Association. The work planned will be confined for the present principally to an effort to cut down car thievery and to boost the construction of good roads.

OPERATING COST DATA.

The Motor Transport Corps of the United States Army is compiling data relative to the cost of operation in commercial service of passenger cars and motor trucks. This information will be furnished to Congress in connection with its consideration of the high cost of living.



Every Type of Freightage Power Truck Was in Line, Every One of These Being in the Service of Business Men of Minneapolis, St. Paul and Their Suburbs, to Demonstrate to the People, and Especially the Farmers, the Possibilities of Highway Transportation.

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STEWART HEAVY OIL SYSTEM.

What is known as the Stewart Heavy Fuel System is about to be produced commercially by the carburetor division of the Stewart-Warner Speedometer Corporation, Chicago, and this is claimed to be a method of carbureting heavy oils that has been extremely satisfactory.

The system is in effect the use of a heating chamber in combination with the fuel intake of an engine, and this combination is maintained to be adaptable to practically all engines. This chamber is combined with the exhaust manifold and it is directly above the spray jet of the carburetor, so that the fuel as carbureted is projected above the intake manifold into it. Claim is made that the fuel is accurately metered by the air flowing to the engine and is projected out of the air stream and into the vaporizing chamber, where it is completely vaporized. The vapor condenses upon coming into contact with the air in the manifold, forming a fog mixture at the lowest possible temperature consistent with a perfectly constituted fuel mixture.

Statement is made that exceptionally fine division by direct spraying at the carburetor nozzle is an expedient for securing uniform distribution of the fuel over the vaporized surface, to the end that its capacity may be high and its size as small as possible. Only the fuel enters the vaporizer. The vapor formed in the heated chamber flows out over the incoming fuel spray and gives up a portion of its heat directly to the liquid globules.

In the fitting of the Stewart Heavy Fuel System, made to secure maximum economy of operation, the charge temperature has a constant value (within plus or minus three to four degrees Fahrenheit) under all conditions of operation, from idling to full load at highest speed. The only change in conditions that can alter the mixture temperature is modification of the ratio of fuel to air in the mixture. An enrichment causes a rise in charge temperature, since more heat is then given up to the air by the fuel vapor. The converse is equally true. This affords an inherent control, and as a consequence no regulation of the exhaust gas sweeping the vaporizing chamber is necessary.

The system is primarily intended for use with trucks and tractors and with it kerosene, distillate and gasoline may be burned. As may be inferred, the system consists of special intake and exhaust manifolds and carburetors that are so constructed that the fuel may be projected into the vaporizing chamber.

TOOL COMPANY EXPANDING.

The Lansing Tool and Stamping Co., Lansing, Mich., is to build an addition to its plant that will double its present capacity. The new building will be a duplicate of the first unit erected, providing 12,000 additional feet of floor space and costing $50 000. When in operation this addition will mean a 50 per cent. increase in the company's pay roll.

Truck Distribution Awaiting Action of Congress

Washington, D. C., Sept. 15.—The distribution of trucks through the Department of Agriculture to the different states has been suspended until Congress enacts or rejects legislation now pending that will authorize the transfer by the War Department to the Department of Agriculture such machines as will be accepted by the states. The decision by the Judge Advocate General that a clause in the Civil Sundries Bill invalidated the provision of the law enacted Feb. 28, that authorized the War Department to transfer its surplus power vehicles to the Department of Agriculture, necessitated cessation of the transfer that had been begun.

Bills now pending in Congress, the one presented by Congressman Kahn of California and the other submitted by Senator Smith of Georgia, must be amended before the original plan can be carried through. The Director of Sales of the War Department has had conferences with representatives of the National Automobile Chamber of Commerce and this committee has conferred with the Department of Agriculture. Everything depends upon the passage of one of the bills.

Statement is made by Assistant Director of Sales Guy Hutchinson that 1243 passenger cars and trucks are in such poor condition they would not be transferred and these have been offered for sale. There is probability no other sales will be authorized by Secretary Baker pending the determination of the bills.

The Motor Transport Corps is preparing for Mr. Hutchinson an inventory of the trucks regarded as surplus, with detail of the condition of the machines. The passenger cars and motorcycles to be sold will be few. Two statements made by Mr. Hutchinson with reference to surplus vehicles, show respectively 33,800 vehicles, of which 14,550 have been constructively delivered and 27,825 machines allotted to states, of which 12,831 were either transferred and shipped, or transferred by order and may not be finally delivered to the states for use in highway construction with Federal Aid. These show 19,250, or 14,992 trucks available, from which must be deducted those that are unserviceable.

The statement of allotment to states shows the following:

Surplus Trucks	Allotted to States	Transferred to States
GMC ¾-ton	589	136
Miscellaneous, including Garford, Moreland, Denby, International, Kelly-Springfield	1,781	591
Pierce-Arrow two-ton	2,334	....
Light Aviation	1,197	448
Nash Quad	7,521	7,049
Miscellaneous, including Republic, Velie, Gramm, Standard, Peerless, Federal, Selden	3,033	1,639
Pierce-Arrow, five-ton	908	....
Packard, three-ton	3,555	....
Heavy Aviation	2,073	1,426
Ford Touring	2,638	1,101
Miscellaneous, passenger	828	442
Miscellaneous, light delivery	1,368	....
Total	27,825	12,832

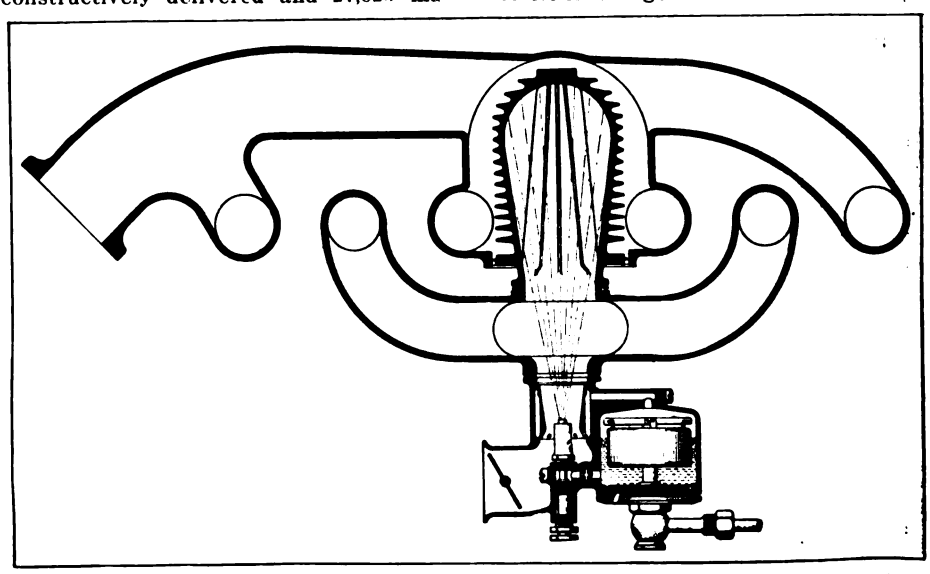
ALL SPACE IS TAKEN AT TEMPLE SHOW.

It has been announced by Commissioner William M. Webster of the Automotive Equipment Association that practically all the available space has already been taken for the exhibit of the association to be held in the Temple at Chicago, Nov. 3-8.

NEW BORING AND GRINDING DEVICE.

A device for the boring and grinding of engine cylinders at one operation, the invention of M. L. Williams and George W. Cole, is shortly to be put on the market by the Standard Tool and Engineering Co., South Bend, Ind.

The Highland Body Manufacturing Co., Cincinnati, O., has opened a branch in Detroit in charge of P. H. Willis.



Drawing Showing the Stewart Heavy Fuel System, Designed to Preheat and Vaporize Gasoline, Kerosene or Distillate.

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FEDERAL HIGHWAY COUNCIL SUCCEEDS HIGHWAYS TRANSPORT COMMITTEE

Washington, D. C., Sept. 17.—The Federal Highway Council, of which S. M. Williams of Lima, O., is chairman, and which is composed of about 500 prominent men in all sections of the nation who are known for their interest in highway development, which has for its primary object establishing a definite highway policy, has undertaken work that was carried on by Highways Transport Committee of Council of National Defense.

The council is an exceedingly influential body and it has been exceedingly well organized. It has been necessarily engaged in seeking the enactment of national law dealing with road construction and maintenance. When the Council of National Defense determined to discontinue the Highways Transport Committee officials of the Federal Highway Council had conference with leaders of highways transport and good road work with reference to the future.

There was seemingly unanimity of opinion that the Federal Highway Council was the logical organization to coordinate the work of the highway and transport interests with its own activities. There was no question that the importance of the work to the entire country has been recognized and there is even greater need than ever for its continuance. The great road building program of the country is so closely allied with highway transportation they must be considered together, not separately.

The proposition to engage in this work was determined after the conferences and announcement has been made that it will be under the supervision of Charles W. Reid as manager of the transportation bureau of the Federal Highway Council. Mr. Reid has been chief executive officer of the Highways Transport Committee since its reorganization, and prior to that was vice president of Rathbone Sard & Co., Albany, N. Y., and Aurora, Ill.

Statement is made that in undertaking the work the Federal Highway Council is assured of the cooperation of the different governmental departments that have heretofore been cooperating in the work of Highways Transport Committee.

DES MOINES TRADE TRUCK TOUR.

The Des Moines Motor Truck Dealers' Association plans to have its first trade tour the week of Oct. 13. The tentative program calls for a tour to last six days and some 25 of the principal cities within the Des Moines trade area will be visited in addition to a large number of smaller towns. The daily run will be about 75 miles, covering 450 miles in all.

A. H. Kroh, who managed the National Truck Development tour, will have charge of this and L. H. Boydston will be tourmaster. The pathfinders will be C. O. Hart, chairman of the Des Moines Motor Trades Bureau; Dean Schooler, president of the Dealers' association; A. J. Knapp, secretary of the Iowa Motor Trades Bureau; R. H. Faxon, secretary of the Des Moines Chamber of Commerce, and Don T. Chamberlain, secretary of the Truck Dealers' Association.

The Des Moines Chamber of Commerce, the Des Moines Auto Dealers' Association and the Iowa Motor Trades Bureau are cooperating with the Truck Dealers' Association in endeavoring to make this event a success.

UNIQUE MOTOR TRUCK DEMONSTRATION.

An unusual demonstration of motor transportation was witnessed by 20,000 Iowans on the last day of the recent Iowa state fair at Des Moines. This was a "ship by truck" parade, and more than 300 trucks were in line, extending four times around the half-mile track at the fair grounds. The procession was headed by six fire trucks from the Des Moines department, and the vehicles shown ranged from half-ton trucks to large street flushers and oil tanks. Both dealers and users participated, each dealer being allowed to enter but one truck.

Glenn D. Mitchell, formerly chief engineer of the L. W. F. Engineering Co., College Point, L. I., N. Y., has resigned to go with the Sinclair Refining Co, Chicago. He has been associated up to this time with the airplane industry.

Highway Transport Committee Work Terminated

Washington, D. C., Sept. 16.—The Highways Transport Committee, which was created nearly two years ago to promote the transportation of freight by road vehicle, primarily to relieve railroad congestion, has been discontinued by the Council of National Defense, and from now on there will be no direct governmental promotion of highway haulage.

The original committee was created as an adjunct to the Storage Committee of the War Industries Board and until a considerable period after the armistice was signed it was directed by Roy D. Chapin, chairman, president of the Hudson Motor Car Co., Detroit, who took up his residence in Washington.

The following announcement has been made by Grosvenor B. Clarkson, director of the Council of National Defense:

The Highways Transport Committee, which was established by the United States Council of National Defense as a necessary adjunct to its war time activities, has been discontinued as of Sept. 15, 1919.

The Highways Transport Committee was continued through the readjustment period up to Sept. 15 in order that such of its work as was initiated under war time conditions might be tapered down to a point where it could properly be closed.

The chief reasons for dissolving the committees were necessary curtailment of expenditures and the apparent fact that the war time functions of the committee did not with sufficient explicitness fall within the peace time activities of the council, as laid down by the congressional act creating it.

Certain surveys, more recently initiated by the committee, logically related to the permanent research work of the council, are being continued.

The council, by order of the president, recently took over the records and files of the War Industries Board, originally created by the council, and of the Committee on Public Information. All of this material will be studied and where practicable kept up to date in so far as it bears on the national defense.

RURAL TRUCK EXPRESS IN NEW YORK.

Governor Smith of New York has appointed a commission to sponsor the establishment of motor truck express lines through the rural sections of that state where farmers are having the most difficulty in getting perishable produce quickly to market. This commission is headed by Peter G. Ten Eyck of Albany.

The governor's reconstruction commission found that in many cases farmers in New York state were unable to get their goods to the New York city markets as quickly as Florida shippers could who had the benefit of direct express service, that the railroad companies seemed to have little interest in local freight business and that farmers with small shipments and short hauls found their goods delayed, and it was estimated that 50 per cent. of the perishable produce grown in the state does not get to market. It was said that the delivery of food by motor express lines could be accomplished at three-fifths the cost of railroad deliveries, aside from the gain in speed.

MOTOR TRUCKS GAIN IN MASSACHUSETTS.

Of the total of 203,850 motor vehicles registered during the first eight months of the present year in Massachusetts, 165,518 were passenger cars and 38,333 were commercial vehicles. The gain over the entire year of 1918 was 28,177 machines, divided into 22,904 for passenger cars and 5273 for trucks.

F. C. Knight has been made assistant manager of the J. I. Case Plow Works, St. Louis. Mr. Knight has recently returned from service overseas and has been connected with the implement and tractor industries for the past 14 years.

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TRUCK TRAIN COMPLETES HALF THE NORTHWEST DEMONSTRATING TOUR



Unloading Republic 2½-Ton Truck's Freight of Merchandise, Hauled from Cedar Rapids to Places Not Accessible Because of Railroad Congestion, Under Shippers' Observation.

MINOT, N. D., Sept. 1.—With the experience of four weeks on which to base opinion there appears to be every reason to believe that "taking the power truck to the farmer" is to result in more real sales and better understanding of the possibilities of truck haulage by buyers than was believed by the members of the National Association of Motor Truck Managers when they authorized and organized the National Motor Truck Development Tour, now half completed.

Much of the success thus far obtained is due to good organization and widespread publicity, but this would have failed were not the farmers and business men of the towns and cities included in the itinerary of the tour intensely interested in the subject of transportation. They know enough about automobile cars to realize that trucks are practical machines, and they are willing to buy them if they can be convinced that they will be economical.

By this is meant if the saving of time and labor obtained in city and main highway haulage is obtainable in farm work; if the trucks can be adapted to agricultural haulage as they have been in mechanical industries and commercial service. The farmer does not want to invest his money until he is certain that to do so is advantageous to him.

The truck tour is creating interest, and it is educating the people to the practical uses that can be made of machines. There is no reason to believe that the organizers will make a sufficient number of sales en route to show profit from participation in the demonstration, but there is no question that every make of truck in the tour will be well known in the sections of the state through which the caravan has passed or will pass, and this will be a substantial foundation on which future business shall be built.

The truck dealers in the different communities will be the direct beneficiaries and up to the present time a sufficient number of prospects have been developed for each manufacturer to justify the organization of a staff to follow up direct inquiries made at the meetings and during the shows and work demonstrations. Not only this, there has been an awakening of car and service station men to the possibilities of truck agencies, and many men who little realized the general interest in highway haulage are now keenly concerned in making associations with manufacturers represented in the caravan.

While the demonstrating tour was organized chiefly to promote truck sales, it has been a very potent factor in educating the people to the economic value of roads and they have had all kinds of object lessons of the power of truck, especially those with pneumatic tire equipment, to move on highways that would be impassable for animal vehicles and in which automobiles have been frequently mired. They have been told pointedly that while there can be large direct economy from the use of trucks on the roads they now have that there would be far greater saving were the roads sufficiently improved and maintained so that there would not be long sections with mud inches deep during and following each fall of rain. The tour has undoubtedly done much to convince the people that good roads will be the cheapest investment of state and community funds that could be made.

When the caravan was started from Chicago with rare exception the success of the project was largely discounted by those who believed in shows organized to familiar plans and held at a different time of the year. But the publicity was widely planned and much local interest was manifested, which increased every day. This has been particularly noticeable in these comparatively small towns and cities, which are the commercial centers of territories of considerable area, so that populations of hundreds have increased to thousands and by the influx of farmers, sometimes from places from 50 to 75 miles distant.

If there is one thing to criticise it is that the participants can devote so little



Trucks and Horse Teams Hauling the Loose and Sheaf Grain from the Harvesting Field on an Iowa Farm—A Spectacle Probably Never Before Witnessed in America.

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time to the tour to those who are decidedly interested. In some of the communities the shows are merely for an hour. Obviously men have not journeyed for many miles for a brief sight of a few trucks. They want first hand knowledge and they would like to get it individually if possible, but often have to be content with generalities rather than direct statements as applied to their own

There is another aspect. The meetings are for the benefit of all and differ greatly from talks with salesmen who are often regarded as endeavoring to make sales and whose statements are not as broadly applied and are not as convincing as are those of one who is speaking in behalf of an entire industry. The prospect is not urged to buy of any one,



Pitching Sheaf Wheat from a Clydesdale Truck Into a Field Threshing Machine.

but he is given facts and figures from the best knowledge of all, and he can take these for their face value and with reasonable assurance they are conservative. Not only this, no spokesman will knowingly misrepresent or economize facts for the benefit of any one concern.

The trucks are traveling about 450 miles a week. The mileage appears to be short, and yet it is greater than would be made in ordinary service. The trucks are handled by experts and the practical lessons in driving are of decided value. There are always interested spectators when the trucks are greased and oiled, and these casual attentions are instructive and are decidedly beneficial. In the farm work done by the trucks the men drive and the farmers handle the grain and the cattle or the freight, and they can make comparison of time as against animal vehicles, knowing how their labor compares with what is ordinarily done.

All of the crews have been worked hard during the tour, that is certain enough, but the work has been so greatly varied that it has not been monotonous, and there have been so many interesting phases that the men have all the opinion that it has been the best educational experience they could have. Every driver and every sales representative now has a better knowledge of the haulage requirements of farmers and are far better qualified to present the qualities of trucks in agricultural operations.

The following gives in sequence the daily events of the tour to date from the stop at Mason City, Ia.:

Helped the Stock Men at Mason City.

Mason City, Ia., Aug. 17.—Today the personnel of the tour caravan is resting at Clear Lake, the guests of Successful Farming, and are making the most of the opportunity for relaxation. The trucks created much interest at the North Iowa state fair yesterday and some decidedly interesting demonstrations were made.

Some of the trucks were engaged in hauling live stock from the fair grounds to the farms of the owners of exhibits. The Hawkeye truck carried 12 hogs weighing 3000 pounds six miles to one farm. The Diamond T truck hauled three cows four miles for a farmer. The Clydesdale and Signal trucks each hauled loads of oats from farms to Mason City,



Loading a Republic 2½-Ton Truck with Loose Grain from an Advance Rumely Thresher to Haul to the Granery for Storage Before Shipping.

making loaded trips of four miles. The Service and Atterbury trucks carried four blue ribbon cows 14 miles to a farm. Because of the railroad embargo and the necessity of making two changes, the owner of two of the cows was three days taking them from the farm to the fair, this necessitating serious loss of time and excessive transportation charges. The time required for the trucks was two hours. Of course this condition could not be often paralleled, but this was an example of the possibilities of having transportation facilities that can be individually controlled. The haulage was directed by L. H. Boydston of the Service Motor Truck Co., who is assistant to Mr. Kroh.

Spencer, Ia., Aug. 18.—The caravan was driven 106 miles today, leaving Clear Lake before 6 o'clock and driving 56 miles to Algona, the first show stop, where a meeting of considerable size was addressed by Mr. Kroh and the trucks were shown to a gathering composed principally of farmers. As the harvesting season is well advanced seemingly the owners of farms are very anxious to find time to learn something about haulage. They know the roads and they are generally surprised to find the machines on time.

After leaving Algona a tire on the Diamond T truck was punctured by a spike, the first tire damage of the tour, and while a new tube was being installed a meeting of the representatives of the different truck companies was held. The tour officials determined upon the meeting to save time, for whenever a show or night stop is made the men are always busy with the spectators and cannot well excuse themselves. It has been thought best to hold meetings when different subjects can be talked over with all present, so that the men can be free at the shows.

The first accident of the tour occurred between Spencer and Algona, when the Winther, in order to let a passenger car pass, pulled out too near the edge of the roadway and rolled down the embankment. Mr. Rightmire, the director of sales, had his hip sprained, and was sent to a hospital here, but was in condition to be removed to his home and expects to be on his feet again in season to attend the big dealers' meeting at Minneapolis, Sept. 24. The sturdy truck was again on the road in 50 minutes and suffered only trifling damage.

Mr. Kroh's lecture was heard by 2500 people. No demonstrating was done. After the day's program had been carried out many of the sales representatives and guests were driven out to Lake Okoboji, the guests of John Wallace of Wallace's Farmer, where bathing and a two hours' motor boat ride was enjoyed. The party remained the guests of Mr. Wallace for the night and breakfast.

LeMars, Ia., Aug. 19.—The mileage made today was 97, the start from Spencer being made at 7:10 a. m. The first stop was at Storm Lake, 37 miles from Spencer, which was reached at 10:10. and

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Feeding Sheaves of Wheat Direct from a Maxwell 1½-Ton Truck Into a Thresher, the Big Machine Requiring Three or More Trucks to Supply It.

the route from Storm Lake here was through Cherokee. The party arrived here at 4:30 o'clock for the night. The roads were sandy and about nine miles was gumbo.

LeMars to Sioux City.

Sioux City, Ia., Aug. 20.—Today's run was only 26 miles from LeMars to this city, as several important events were scheduled here for the afternoon and evening. Arriving at noon the entire party became the guests of the Commercial club for luncheon, which was also attended by members of the local committee, the local truck dealers and bankers. Remarks were made by representatives of the various interests and Mr. Kroh made a hit with his talk on the "Motorization of the Farm."

At 4 o'clock the big parade of the tour and local trucks was held in the business section. In the evening there was a band concert and thousands of citizens from the city and outlying districts strolled around among the trucks and got valuable first hand information.

All interests were enthusiastic concerning the good the reception had done in this city and vicinity. F. E. Clark, chairman of the local committee, summed it up as follows: "The idea of bringing these trucks to our doors—a great fleet of them—has given us more information than we could have secured otherwise in a year of milling around with catalogues and with looking at the various makes of trucks singly."

In the way of practical demonstration, an Atterbury hauled cattle a distance of 27 miles from LeMars to the stockyards here.

Sioux City to Sioux Falls.

Sioux Falls, S. D., Aug. 21.—The trucks got away from Sioux City at 7:15 this morning, several of them being loaded with groceries from Jewitt Brothers, wholesalers, for delivery at various points en route. Representatives of the Jewitt concern accompanied the trucks to check the possibilities of their use in intercity transportation and reported themselves as well pleased at the results.

Lunch was had at Beresford at 11:10, and at Worthington a delegation of business men from Sioux Falls met the tourists and were surprised to find that the schedule outlined was being followed out so promptly. The total run for the day was 77 miles.

After supper here there was a parade and band concert, followed by speaking. Among those who made remarks were Mr. Mannix, publisher of the Commercial News; John Deets of Mankota, N. D., well known on account of his activities in connection with the good roads movement, and Professor Holden of the International Harvester Co.

After the street meeting an adjournment was made to the Commercial club and a very wide-awake session was held, Mr. Kroh taking an effective part in the speaking. No special demonstration of hauling was arranged here.

Mitchell, N. D., Aug. 22.—The caravan made a rather late start from Sioux Falls this morning and arrived at Canastoto, a run of 32 miles, in time for a late lunch. Lunch was followed by a short parade and A. R. Kroh, official lecturer, spoke. Although this is a small town, it has many trucks in use throughout the farming section.

The getaway from Canastoto was made at 3 p. m., and the run of 44 miles to Mitchell, the night stop, was made in three hours, one stop being made en route, at Alexandria. The total mileage for the day was 76.

At a banquet held here the regular tour speakers were preceded by the mayor, who made the statement that it was the most interested audience he had seen in a long time. Mitchell is situated in the center of the corn belt of Dakota, and it was demonstrated that its people are very much alive. The annual Corn Congress is a big feature here and furnishes an excellent opportunity for the demonstration and introduction of trucks.

Mitchell to Huron.

Huron, N. D., Aug. 23.—While informal meetings were being held at Mitchell early this morning with the truck dealers, the Sterling truck got out and hauled a load of 5250 pounds of shingles for a farmer, and the Republic truck carried 4370 pounds of threshed oats from a farm to the elevator in the city.

The caravan got away at 10:30. A short stop was made at Letcher, where the convoy was met by Mayor Dalton of Woonsocket. Mayor Dalton is well known throughout the state and his section generally as an advocate of good roads and an agitator for better rural conditions, and when he found out that the itinerary of the National Motor Truck Development tour did not include his city he got into touch with headquarters and made strenuous efforts to have Woonsocket visited. The caravan certainly had a wonderful reception there in point of attendance and interest.

The local committee from this place met the caravan outside the city gates and a big truck parade was arranged to escort the visitors into and around the city. The mayor made the speech of welcome.

Huron to Aberdeen.

Aberdeen, S. D., Aug. 25.—After enjoying a day of rest, spent in side trips by



A Service 1½-Ton Truck with a Load Piled as High as the Body Would Carry, Even Deeply Covering the Driver's Cab.

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JUST A LITTLE DEMONSTRATION

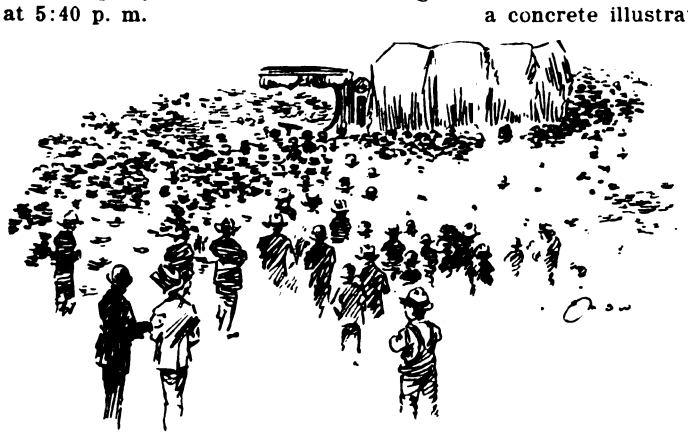
some of the personnel of the tour through the surrounding country in automobiles, the party left Huron at 7:05 this morning. The mileage from Huron to Redfield, where the first stop was made, is 40, and the arrival there was at 10:20. Lunch was taken and a band concert given. The Sterling, Service and Winther trucks had opportunity to do a little demonstration work in hauling farmers and city people around the town.

The night control was this city and the tourists arrived at 5:30 p. m. The run from Redfield here was 40 miles and the total mileage for the day was 80. The local committee met the party at the Country club, a few miles outside the city, and the welcome was most enthusiastic. At the city limits the procession was augmented by 50 trucks and other cars, containing the fire chief, chief of police and mayor, and the keys to the city were presented. The parade, as it entered the city included the Naval band and a local band furnishing music, and the streets were packed with spectators, which showed that the country at large is vitally interested in motor truck transportation. The evening's exercises included band concerts, a street dance and speech making. Over 5000 people gave Mr. Kroh and the other speakers an enthusiastic reception.

The tourists arrived here just after a big tractor demonstration and the local dealers are planning to follow up these events with a lot of hard work in an endeavor to get the truck firmly established in this vicinity.

Aberdeen to Ellendale.

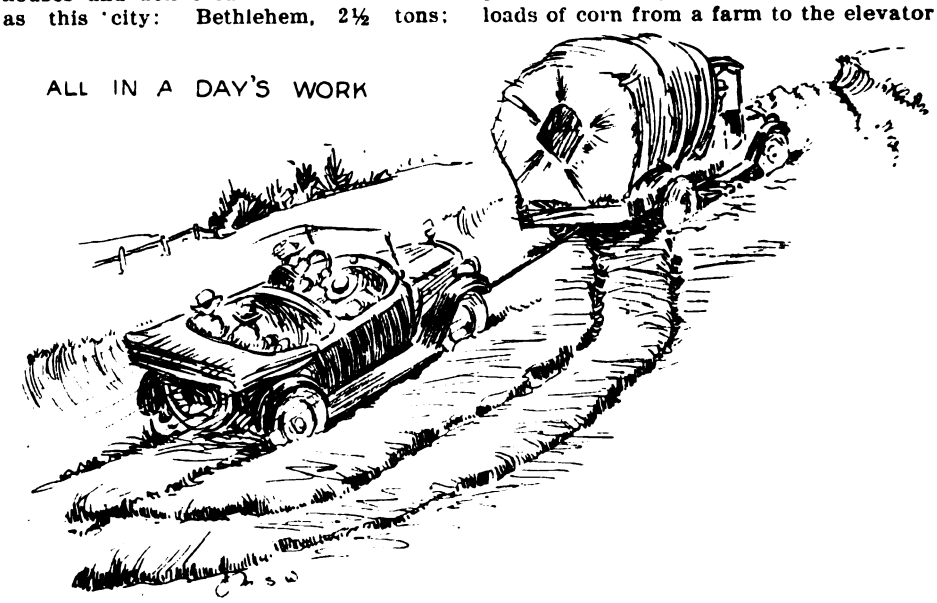
Ellendale, N. D., Aug. 26.—The run from Aberdeen to this city is 50 miles and the party arrived here for the night at 5:40 p. m.



GETTING THE FINE POINTS

The various trucks spent a good part of the day in demonstration at Aberdeen. The Republic, Gramm-Bernstein and Hawkeye each hauled a load of grain from the thresher to the elevator, a distance of six miles to the round trip, and the average time consumed for the round trip was 36 minutes. Other trucks were, in the meantime, hauling bundles of grain to the thresher as follows: Service, six loads; Diamond T, seven loads; Clydesdale, five loads; Selden, seven loads; Signal, three loads; Sterling, five loads; Atterbury, six loads; Maxwell, seven loads. These loads ranged in weight from 1200 to 1800 pounds.

Leaving Aberdeen, the following trucks hauled merchandise from the wholesale houses and delivered it en route as far as this city: Bethlehem, 2½ tons; Diamond T, 1½ tons; Atterbury, 2½ tons; Sterling, one ton.



ALL IN A DAY'S WORK

On arrival at this city the celebration took the form a fete for the Jackies and a dance was held. There was given, however, opportunity for the tour lecturers to present their stories, which were well received. In fact, so enthusiastic are citizens here on motor truck transportation that a movement is on foot to have a concrete illustration of their efficiency in the carrying of a lot of hogs to the stockyards at Fargo, to arrive there the same time the tour is due.

Ellendale to Jamestown.

Jamestown, N. D., Aug. 27.—The first stop on the way here from Ellendale today was at Edgeley. The day's run was 85 miles.

Major E. M. Lubeck of the United States Motor Transport Corps, joined the tour here, and will accompany it the rest of the way, making a report to the War Department later on the value of the pneumatic tire for the motor truck.

Jamestown to Bismarck.

Bismarck, N. D., Aug. 30.—Although Steele was on the original itinerary as a night stop, it was determined to make that place the noon stop and forge ahead for this city last night instead of tonight. This variation was made by Tourmaster Spencer on representation made to him at lunch that that town could not adequately accommodate the party. The day's run was 105 miles.

Just before reaching this city the Hawkeye suffered a puncture which was quickly taken care of.

The party was in this city practically three days and the time was fully occupied in various activities and festivities. Frday the early part of the day was devoted to demonstrations The Winther performed various stunts in different parts of the city; the Atlas hauled two loads of corn from a farm to the elevator here, 4.6 miles round trip, the loads being 2410 and 2030 pounds; the Republic hauled a load of corn, consisting of 5260 pounds, from farm to elevator, three miles for the round trip; the Gramm-Bernstein carried coal from the railroad station to the hospital, 5000 pounds, distance 3½ miles.

In the evening, Governor Frazier, Official Lecturer Kroh, Major Lubeck and Lieutenant Wilson made speeches at a meeting at the McKenzie hotel.

The event of the day Saturday was a big parade in which the trucks of the tour and local trucks participated. Speeches were made and moving pictures of the tour were shown at the Auditorium in the evening.

Bismarck to Turtle Lake.

Turtle Lake, N. D., Aug. 31.—The caravan left Bismarck at 1 o'clock and made this place its night control, after a run of 65 miles. A stop was made at Wilson at the request of Mayor G. W. Stewart. Mr. Stewart is interested in the Washburn-Wilton Lignite Co., the principal industry in that town. A brief call had also been made previously at Washburn.

(Continued on Page 423.)

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MODEL 25 1¼-TON GARFORD TRUCK

COMMERCIAL production of a 1¼-ton truck chassis has been begun by the Garford Motor Truck Co., Lima, O., this to be known as model 25, which is claimed by the company to be the strongest machine of its load capacity yet built. The addition of this unit completes the Garford series, and the design is maintained to be probably the best that the concern has produced, because it has been carefully refined and perfected, and it represents the fullest experience of the engineering organization of the company.

The engine is a four-cylinder, four-cycle, water cooled, L-head, vertical type, with a cylinder bore of 3¾ inches and stroke of 5⅛ inches, that is rated by the S. A. E. formula at 22.50 horsepower, but which will considerably exceed this production. The cylinders are cast en bloc with the heads and valve chambers and water jacket integral, the valves being at the right side. The water jacket is large and the cooling is claimed to be unusually efficient.

The cylinder blocks are cast from gray iron and there is a passage cored for the fuel to pass from the intake side to the valve side of the engine, this insuring the heating of the mixture drawn from the carburetor. The blocks are carefully tested, rough bored, aged, reamed and finish ground. The pistons are cast from the same material as the cylinders and they are channelled for three concentric rings and for oil grooves. They are unusually long and the skirts are below the cylinder bases when the pistons are at bottom center.

Detail of the Engine.

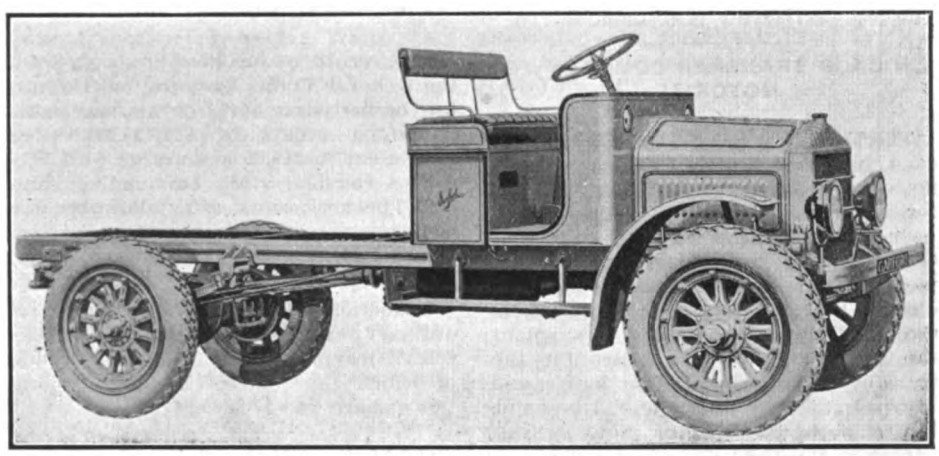
The crankcase is cast iron and is formed in two sections, the upper being divided transversely by a central web that carries the main bearing. The timing gearset and the flywheel are enclosed in forward and rear extensions of the housings. The rear support arms are cast integral with the bell that encloses the flywheel. The crankshaft is a three-journal type that is drop forged from special alloy steel with the flywheel flange integral and the camshaft is a steel drop forging with the cams integral. The crankshaft is heat treated and ground and the camshaft is case hardened and ground.

The timing gearset is made up of three gears with wide faces, cut helically, that are practically noiseless. The water pump shaft has a forward extension and this shaft drives the magneto, and when electrically equipped, the magneto and generator are driven tandem. This simplifies the gearset exceedingly. The engine is designed so that electric starting and lighting system can be installed without changes and additional fittings.

The connecting rods are I section drop forgings, heat treated, and the wristpins are case hardened steel tube. The valves have cast iron heads with steel stems and are fitted in long guides, and the mushroom type tappets have adjusting screws and lock nuts and operate in large renewable guides. The crankshaft and crankpin bearings are babbitt metal that are enclosed in bronze shells. The camshaft and connecting rod upper bearings are phosphor bronze and the latter oscillate on the wristpins, which are secured in the piston bosses.

Cooling and Lubricating System.

The engine is lubricated by a combination pressure and constantly level splash system. The oil is drawn from a screened well in the reservoir in the base of the engine case and is forced through a system of steel tube to the main bearings and the timing gearset by a gear pump driven by the camshaft. The cylinder and piston walls, the wristpins and camshaft bearings and the crankpins and the cams and valve tappets are lubricated by the splash distribution. The oil drains to the reservoir for circulation.



The Complete Model 25 Garford 1¼-Ton Truck Chassis, with Standard Equipment and Pneumatic Tires, the Latest Development of the Garford Series.

The engine is cooled by a circulation of water through the cylinder jackets, forced by a centrifugal pump, and a large radiator with copper vertical finned tubes and cast top and bottom tanks, the upper finned, and by a fan driven by a flat belt. The radiator is spring mounted.

The source of ignition current is a high-tension magneto on all chassis, this being separate from the starting and light systems, when these are installed. The fuel is supplied from a Stromberg carburetor from a 20-gallon tank under the driver's seat. A combined strainer and shut off, attached directly to the tank, is included in the main fuel line.

The Power Transmission System.

The engine is suspended on three points, the forward mounting being on a cross frame member. The clutch is a multiple dry disc ball bearing type that is enclosed in a housing bolted to the flywheel case and clutch shaft has two Daimler type joints between the clutch and the transmission gearset, a selective sliding gear type with three forward speed ratios and reverse that is mounted amidships. The transmission gears and shafts are 3½ per cent. nickel steel, double heat treated. The shafts are all carried on roller bearings. The gearset case is mounted on three points. The power transmission system includes a tubular shaft fitted with Spicer universal joints, which are enclosed in grease tight housings. The shaft is coupled to worm shaft of a worm drive type rear axle. The housing of the axle is one piece and it is fitted with Timken roller bearings throughout. The axle shafts are 2⅝ inches diameter at the bearing and are fitted into the differential gearset with splined ends.

The differential is a bevel gear construction, and it is assembled on the cover plate of the axle bowl so that the entire assembly may be removed as a unit. The worm shaft is steel and the worm wheel is a special bronze.

The front axle is built at the Garford plant and it is a drop forged I section with nickel steel steering knuckles and it is fitted with oversize pivot pins and the pivots are equipped with spherically seated ball thrust bearings.

The frame is constructed of pressed steel channel section of 7/32 inch metal, having width of five inches with webs 2½ inches wide. This is assembled with six heavy cross members that are reinforced with gusset plates and hot riveted. The frame is suspended on semi-elliptic chrome vanadium steel springs, the forward set being 42 inches long and 2¼ inches wide with eight leaves, and the rear set is 50 inches long and 2½ inches wide with eight leaves. The spring shackles are drop forged heat treated steel and the spring eyes and shackle pins are lubricated by large oilers.

Wheels and Steering Gear.

The wheels are artillery type, wood, and are shod with 36 by 3½ inch tires forward and 36 by four inches rear. The wheels can be fitted with pneumatic tires as extra equipment and the cord type, 36 by six inches, with extra rim and power tire pump installed on the engine are supplied at $285 extra.

The steering gear, a worm and nut construction, which is irreversible, is at the left side. The 20-inch wheel has a five-armed spider and a notched rim, is very strongly built for a machine of this size.

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The control is by foot pedals for the clutch and service brake, throttle and ignition control levers on the steering column and the gear shifting and emergency brake levers in the center of the footboard. Both sets of brakes operate on the rear wheels and are fitted with equalizers.

Statement is made that the truck has as a whole a very large factor of safety. Although rated as having 2500 pound load capacity, it has rear axle, transmission gearset and frame of sizes equal to those used for 1½-ton trucks and the brakes are the size of those used for two-ton chassis. Throughout the components are unusually large and there is reason to expect extreme endurance of the machine.

The chassis is equipped with the distinctive Garford curved steel dash, driver's seat, running boards, fenders, oil dash and tail lamps, and as special endeavor has been made to standardize the bolts and screws odd size wrenches and spanners are not required. The equipment also includes a full set of tools. The price is $1890 f. o. b. Lima, O.

CHICAGO TRANSFER COMPANY TO MOTORIZE.

The Frank Parmalee Transfer Co., Chicago, has been reorganized and will replace its horse drawn vehicles with motor 'busses and trucks. The capital has been increased from $500,000 to $1,000,000, and this modernization of equipment is the first and most important change that follows the reorganization. Over 100 motor 'busses are to supplant the 125 horse drawn vehicles for the transfer of passengers from hotels and railroad stations. Baggage will be handled by about 50 three-ton motor trucks.

NEW PLANT FOR ZENITH TIRES.

The directors of the Zenith Tire and Rubber Co., Cleveland, O., have voted to increase the capital stock from $10,000,000 to $20,000,000, and will start building a new plant Jan. 1, for the exclusive manufacture of cord tires.

FIRESTONE SALES INCREASE.

The sales of the Firestone Tire and Rubber Co., Akron, O., from Nov. 1, 1918, to Sept. 1, 1919, were $69,475,197.14, as against $63,821,046.67 for the same period last year, an increase of nine per cent. This increase is all the more significant when it is considered that prices were reduced from 15 to 32 per cent during that period. Sales in August, 1919, were the largest in the history of the company, and an increase of 31 per cent. over August of last year is reported.

The Firestone company has voted to increase its capitalization from $15,000,000 to $75,000,000, and plans for the immediate construction of a $400,000 mechanical building have been made public. The new shop will be located in the rear of plant No. 2. This addition will give Shop No. 2 an increase in capacity from 10,000 to 16,000 tires a day, and Plant No. 1 will be converted from fabric to cord tire manufacture.

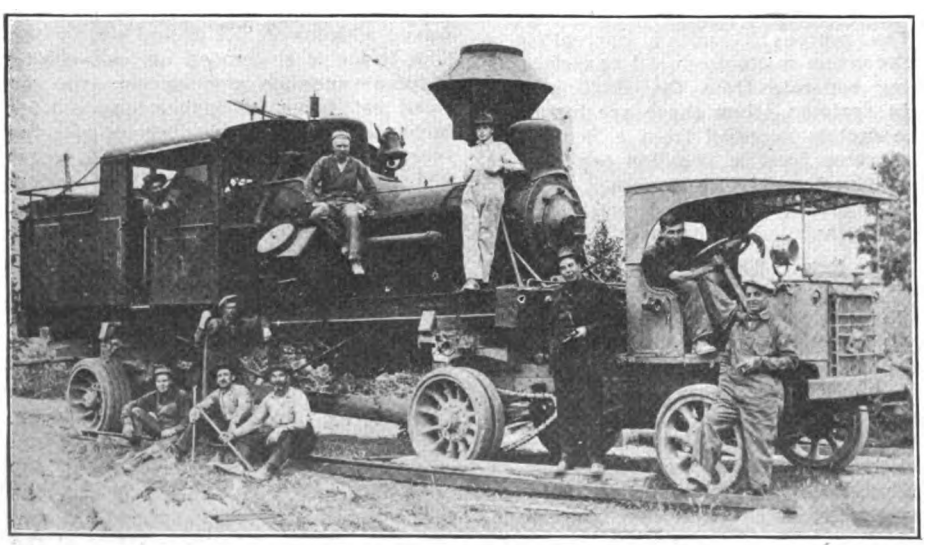
GENERAL MOTORS PROFITS.

The record of business transacted by the General Motors Corporation, Detroit, for the first six months of this year show undivided profits of $29,125,942.10, or equivalent to $19.25 a share on $151,301,000 of common stock outstanding June 30. The net profits, after allowance for ordinary taxes, insurance, depreciation, bonus and employees' investment fund, were $48,900,800.63.

Deductions for Federal taxes and extraordinary expenses aggregated $17,706,636.25, leaving $31,194,164.38 net profits, of which the General Motors Corporation's share was $30,509,987.60.

BATTERY CONCERN CHARTERED.

The Cooper Storage Battery Manufacturing Co. has been chartered at Cincinnati, with a capital of $250,000, to manufacture storage batteries for trucks and automobiles. The incorporators are: I. J. Cooper, L. Tully, C. A. Ginter, A. H. Brendel, J. D. Cloud.



A Garford Tractor and Semi-Trailer Riding a Locomotive Boiler, Stack, Firebox, Cab and Other Accessories, Dismounted from the Running Gear. An Unusually and Weighty Load for Road Haulage.

CANADIAN TRUCK SHOW WANTS MORE ROOM.

Conditions at Canada's only motor truck show held at Toronto, Canada, the week of Sept. 2, in conjunction with the Canadian National Exhibition, demonstrated the fact that more space is needed in which to fully demonstrate the extent of the automotive industries of the Dominion. Twenty-nine truck manufacturers were represented, but many of them were dissatisfied because at most they could show but three or four models, and it is predicted that unless the much heralded Automotive Palace, with quadruple or quintuple the accommodation afforded by the Transportation building, is constructed before another season, the Automotive Industries of Canada will withdraw its sanction and support from the event.

TRANSFER OF ARMY TRUCKS SANCTIONED.

A bill has been introduced in Congress to authorize the transfer of motor trucks to the United States Department of Agriculture by the War Department. This bill was occasioned by a recent decision by the Judge Advocate of the Army who found the postoffice act of February, 1919, void, which decision held up the transfer of 23,000 trucks asked by the Department of Agriculture from the War Department.

ARMLEDER TO BUILD TRUCKS EXCLUSIVELY.

The O. Armleder Co., Cincinnati, which has been building horse drawn delivery wagons for the last 38 years, and trucks for the past 10, is to discontinue the horse drawn vehicle business and is remodeling its plant for the exclusive manufacture of trucks, with facilities for the production of 20 trucks a day.

TRUCKS A FEATURE OF DAIRY SHOW.

Motor truck manufacturers are awakening to the problems of the dairy transportation business. One instance of this is the fact that big displays of trucks will feature the National Dairy show, which will be held in Chicago, Oct. 6-12, about 10,000 square feet of space being given over to this section.

The Thermoid Rubber Co., Trenton, N. J., has opened sales offices at 1302-3 Swetland building, Cleveland, O., with H. R. Portugal in charge of sales and Carl A. Schell in charge of engineering.

William H. Huff, who has been assistant sales manager of the frame division of the Detroit Pressed Steel Co., has been made advertising manager for both the frame and wheel divisions.

N. J. Clucas, formerly with the Standard Parts Co., Cleveland, has been appointed manager of the new Detroit sales office of the Lancaster Steel Products Co., Lancaster, Pa.

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RURAL EXPRESS EXHIBIT AT NEW YORK FAIR.

A new feature of the 78th annual New York State Fair, which closed at Syracuse, N. Y., Sept. 13, was the rural motor express exhibit arranged under the auspices of the Division of Food and Markets of the State Department of Farms and Markets. It is estimated that more than 175,000 persons viewed this exhibit, which was housed in the States Institute building.

An interesting feature were three heavily loaded trucks that traveled long distances to actually demonstrate what trucks can do. An Oldsmobile, loaded with a ton and a half of potatoes and apples, traveled from Buffalo to Syracuse in less than two days running time, arriving at the fair in perfect condition. A Brockway, heavily loaded with bailed straw, was driven from Cortland to Syracuse, and a Sanford carried a load of butter tubs from Syracuse to a butter manufacturer in Buffalo. These trucks also gave demonstrations every other day in conjunction with 20 farm tractors.

The publicity department of the exhibit distributed 6000 pamphlets describing the progress of the rural motor express and its advantages. About 1100 individuals, mostly farmers, but including physicians, contractors, ministers, county agent leaders, librarians, school teachers, engineers, railroad men, newspaper men and periodical representatives, signed cards requesting full information on the subject.

BROOKLYN'S SHIP BY TRUCK PARADE.

Borough President Edward Riegelmann of Brooklyn, N. Y., has accepted the chairmanship of the committee in charge of the Ship by Truck Industrial Exposition, which is to take place in that city on Columbus Day, Oct. 13. President Riegelmann sees in this exposition an opportunity to give to the country at large a conception of Brooklyn as an industrial center.

The exposition will take the form of a parade of motor trucks along the principal avenues of Brooklyn, each truck to carry a load or float that will illustrate the efficiency of the manufacturing and transporting facilities of the entrant. The exhibitors will be drawn from the various industrial activities and civic divisions that go to make up industrial Brooklyn.

It is also planned to include in the procession motor transports from the various farmers' cooperative leagues, showing how the up-to-date farmers have combined to decrease the cost of delivery of their produce to the market.

CHANGE OF SELDEN CORPORATE NAME.

George C. Gordon, president, announces that on Sept. 15 the corporate name of the Selden Truck Sales Co., Rochester, N. Y., was changed to Selden Truck Corporation and that the new company has assumed all the obligations and contracts of the old.

Hauls 60,000 Bushels of Peaches With Two Trucks

The Harrison Nurseries, Berlin, Md., which operate one of the largest peach orchards and nurseries in the country, is using motor trucks to market its annual crop of peaches.

The Harrison Nurseries has 2500 acres of peach trees of bearing size and it is estimated that the crop this year amounted to 60,000 bushels. The fruit had to be transported from the orchards to the packing house, where it was loaded into refrigerator cars. The establishment covers 7000 acres in all, with orchards and nurseries scattered over a four-mile radius from the packing house which is located on a spur track of one of the Pennsylvania lines. The owners are State Senator Orlando Harrison and his brother, A. G. Harrison.

The entire crop is handled by two White trucks, made by the White Co., Cleveland. Pickers in the orchards gather the peaches into five-eighths bushel baskets and the trucks carry the baskets to the packing house. Ordinarily the trucks carry 150 to 175 baskets to a load and make 12 to 15 trips a day each, but on one particularly busy day one of them made 13 round trips, carrying 184 baskets on each trip, and made two runs to an orchard four miles away to carry employees. On another occasion one of the trucks carried a party of Harrison employees to an orchard at Easton, in which the Harrisons are interested, aided in picking and packing $16,000 worth of peaches and carried its crew 75 miles back across the eastern shore peninsula to Berlin—all in six days.

"Dependability—that's the reason for our using White trucks," said G. A. Harrison. "Picking and packing peaches is all rush work. When the peaches are ready we must be ready to pick and move them, smoothly and swiftly. We simply must have transportation equipment that can be depended upon at all times. In summer temperatures a few hours delay may ruin hundreds of dollars worth of fruit or entail losses through idleness of employees. In either case delay would be costly. Our Whites have never failed us yet."

The peach season covers only a few weeks of each year, but throughout the year there is work at the Harrison establishment for the two trucks. In winter they carry shipments of nursery stock to the railroad. Besides they haul fertilizer and other farm supplies and engage in the many and varied jobs of transportation that continually present themselves.

BRADLEY JOINS PRESBREY.

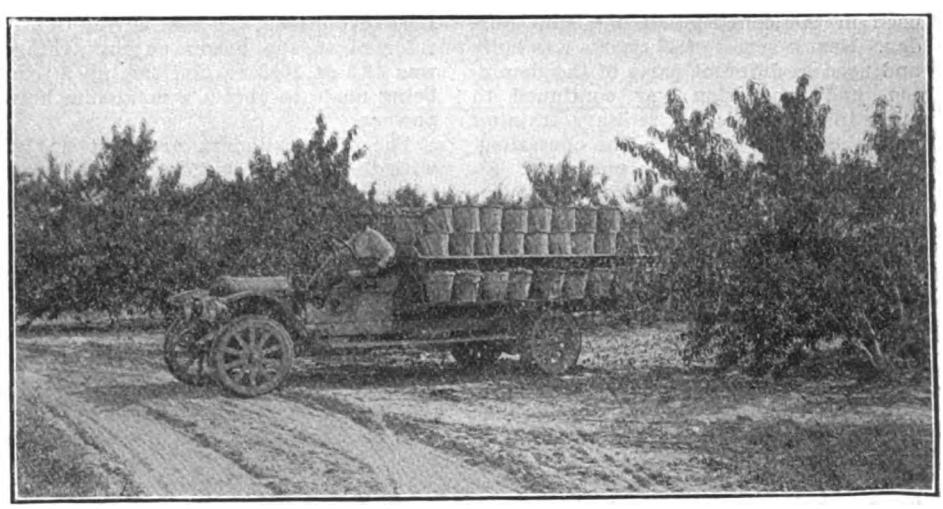
Leon M. Bradley, who was for a considerable period general manager for the Motor and Accessory Manufacturers' Association, and previously was identified with the Association of Licensed Automobile Manufacturers and the American Motor Car Manufacturers' Association, being assistant to Alfred Reeves, now general manager for the National Automobile Chamber of Commerce, is now associated with the Frank Presbrey Co., advertising specialist, 456 Fifth avenue, New York City.

HITCHCOCK WITH NOYES-BUICK CO.

A. S. Hitchcock, well known from his connection with the automotive industry for the past 20 years, has been appointed manager of the branch store of the Noyes-Buick Co., at Hartford, Conn. The Noyes-Buick Co. is the New England distributor for the GMC line of trucks, manufactured by the General Motors Corporation. Mr. Hitchcock was formerly identified with the same company in Providence, R. I. The branch store at Hartford is located at 39-41 Allyn street.

TRACTOR PLANT REBUILT.

The Moline Plow Co., Moline, Ill., will rebuild its tractor plant at Rock Island, which was recently destroyed by fire with an estimated loss of $500,000. The new structure will be larger than the one destroyed, making possible an output of 150 tractors a day.



White Truck in the Orchard of the Harrison Nurseries, Berlin, Md., with a Load of 175 Baskets of Peaches Carried in Special Racks.

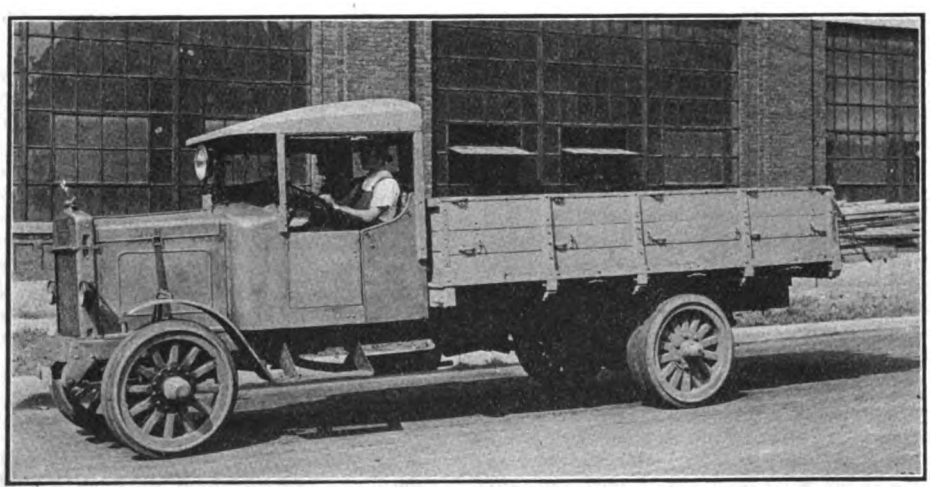
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HIGHWAY KNIGHT-ENGINED TRUCK

PRODUCTION of the only truck with a sleeve valve engine has been begun by the Highway Motors Co., Chicago, a concern that has a well equipped plant at West 57th and Federal streets. The chassis are built with two ratings, four and five tons, but the principal difference is in the spring sizes. Other than this the chassis are identical.

The company acquired the Highway Motors, Ltd., a Canadian concern organized during the European war to build trucks for army service, and established it in Chicago. The Canadian company sought to cooperate with the government and this led to submission of the proposition to the Mechanical Transport Division of the British War Office of an operating plan and a design for a truck that had been tentatively determined. The fact that a number of European truck and car manufacturers were using Knight engines with considerable success was the reason that this type was approved for the new Canadian truck design.

The company considered the Moline-Knight engine and one was installed in an experimental truck and tested for four months by army officials. Then 10 trucks of this type were built and were used in the construction of Camp Borden. Next a series of 25 trucks was built and used in different parts of the dominion, and production was continued to meet the demands for military training until the end of the war. The operations of the company were then uncertain. So satisfactory had the machines proven, however, that the American company was formed and took over the Canadian corporation and will operate in a large way.



A Five-Ton Knight-Engined Truck Chassis with Standard Equipment with a Combination Express and Stake Body and Full Cab.

New Type Power Transmission System.

The chassis has a different type of power transmission system than is conventional with other American trucks, and statement is made that this has proven to be exceptionally efficient and satisfactory. Claim is made that the truck as a whole is thoroughly developed to sound engineering and that it includes distinctive features that have been amply proven.

The chassis frame is built with no cross members save at the ends, but the construction is reinforced by the support arms of the engine, the tubular members on which the power transmission unit is mounted, the tie rod at the rear ends of the rear springs and the brake shafts. The frame is free to weave, however, and the transmission unit is carried at three points in spherical seats, so that it is not stressed by road shocks or chassis distortion.

The four-ton chassis is a standard type for mounting omnibus bodies for passenger carrying, and the front and rear springs are two inches shorter and the rear springs a half-inch narrower than those of the five-ton chassis.

Moline-Knight Engine Used.

The Knight type sleeve valve engine used in these chassis is identical, save for the heavier crankcase, with the engine that was driven for 337 hours under full load in the laboratory of the Automobile Club of America, the results being claimed world records for endurance, power and economy. The cylinder bore is four inches and the stroke six inches, this having S. A. E. rating of 25.60 horsepower, but claim is made that these engines have developed 65 horsepower at 1800 revolutions, and that during the test referred to the power output averaged was 38.3 at 1682 revolutions, no attempt being made to obtain a maximum horsepower.

The four cylinders are cast en bloc with the intake manifold and the water jacket integral. The cylinder heads are covered with a plate that forms an unusually large water chamber. The cylinder heads are cone-shaped caps with the spark plug bores in the centers, which seat into the cylinders to a depth of several inches. The spaces between the sides and the centers of the caps are included in the water chambers, so that the upper ends of the reciprocating sleeves have water circulating on both sides, and the upper halves of the spherical combustion chambers are water jacketed. The reciprocating sleeve, save at the ports and at the extreme lower ends are surrounded by water.

Engines Effectively Cooled.

The circulation is thermo-syphon. The cylinder cover plate forms an upper water manifold through which water passes to the radiator. The lower water connection from the radiator has two branches, one to the forward end and the other to the rear end of the lower edge of the cylinder block. This construction assures an equal flow of water to all cylinders, the water flowing around the barrels and the intake manifold, and thence to the cylinder head and through the water outlets.

The sleeves are actuated by connecting rods from the eccentric shaft, which is driven by a silent chain from the crankshaft. The chain also passes over a sprocket that drives the magneto and generator, which are mounted on top of the base plate at the left side of the engine.

The crankshaft is a nickel steel drop forging, a three-journal type, 2½ inches diameter, that is triple heat treated.

High Pressure Lubricating System.

The engine is lubricated by a high pressure system, the oil being drawn from a sump in the bottom of the crankcase through a screened intake by a gear driven pump and forced through a manifold extending the full length of the engine, parallel with the crankshaft to the three main bearings and the timing gearset, and thence through drilled ducts in the crankshaft to the crankpins, at a pressure up to 50 pounds. The oil is carried through the bores of the wristpins to the walls of the cylinders and sleeves. The pressure is 50 pounds maximum at high engine speed and the regulation is automatic, the pressure regulator controlling the maximum pressure. With this system all the bearings are flooded with oil. The excess drains to the reservoir and is circulated after filtration.

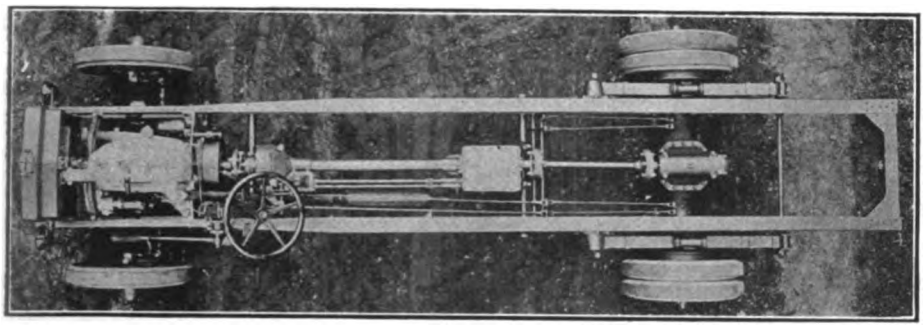
Combines Carburetor and Governor.

The source of the ignition current is a high-tension magneto. The fuel is supplied through a Zenith carburetor, which is a special design for this engine and includes a governor. It has no springs, moving parts or adjustments and the throttle shaft is mounted on phosphor bronze ball bearings. The governor is operated by the velocity of the gasses in the intake manifold. The control member is a disc that floats in the path of the gasses and its response is instantaneous with any increase or decrease of the load. It has no connection with any moving part of the engine or truck and requires no oiling or attention. It is claimed to be positive in action and as there are no revolving parts and it is not driven, it is not variable from any influence other than the fuel supply. Any desired speed can be obtained and the setting locked. The driver can control the throttle to bring it to a closed position, but he cannot exceed a fixed maximum when the control lever is in the "open" position.

Special Type of Radiator.

The engine is cooled by thermo-syphon

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Plan View of the Highway Five-Ton Truck Chassis, Showing the Frame Without Cross Members and the Power Plant and Transmission Unit.

circulation of water and by a three-blade, 20-inch cast aluminum fan, driven by a V belt with an adjustable tension. The radiator is designed to meet the requirements of the company's engineers and is claimed to be the development of the construction and test of more than 40 different radiators. The top and bottom tanks are cast iron and the cooling section is half-inch seamless copper tube with helical fins, with copper or brass headers, the tanks and cooling section being assembled with cork gaskets and bolted together.

Any of the tubes can be removed or replaced in the event of damage of failure. The repair can be made by any mechanic. The inlet from the engine is at the bottom of the top tank, and when filled there is a considerable head above the inlet. The filler of the tank is so large no funnel is necessary for filling. The water passages from the top to bottom tank are straight and are such dimension there is no possibility of clogging. The water capacity of the system is 17 gallons.

The Power Transmission Unit.

The clutch, drive shaft, torque tube, gear changing and brake levers, clutch and service brake pedals and brake rocker shafts and transmission gearset are combined in a single unit that is mounted in the frame on spherical seats, this unit and the engine being suspended at three points and independent of each other.

The clutch is a multiple dry disc type that is enclosed in a housing to which the forward end of the torque tube is attached. The forward end of this housing is mounted on a spherical bearing carried by a tubular frame cross member. The clutch discs are steel, each alternate disc being faced with woven asbestos and wire fabric. The clutch pedal is on the end of a shaft that carries the disengaging yoke and control is through a large ball bearing on the hub of the clutch. There is no connecting linkage and the control is said to be positive. The construction of the clutch is such that it cannot be burned or damaged and it is maintained to be very efficient.

The gear changing and emergency brake levers are mounted in the center of the truck directly over the clutch housing. The gear changing rod extends through the front end of the transmission gearset housing and parallel with the torque tube and into the control set housing, which insures against wearing joints between the front shift finger and the shifting forks in the gearset housing. The gearset is a selective type, having four forward speed ratios and reverse. The gears and shafts are nickel steel and are heat treated. The gears are 5-7 pitch and are respectively 1¼, 1½ and 1⅝ inches width. The gears are interlocked so that two gears cannot be simultaneously engaged. The gear ratios are first, .484:1, 2.84:1, 1.50:1 and direct and reverse, 5.81:1.

The driving shaft is nickel steel, 1¼ inches diameter, heat treated. The rear end of the torque tube is bolted to the front end of the transmission gearset housing. The brake rocker shafts are mounted on the power transmission unit and are not affected by the weaving of the flexible frame. Between the engine and the clutch is a flexible coupling of six fabric discs that requires no attention and is not affected by heat, water or oil. The driving shaft is only 26 inches long and when the truck is loaded it is in a straight line. The maximum angle of inclination never exceeds five degrees.

Worm Driven Rear Axle.

The rear axle is worm shaft and worm wheel driven, the worm being a straight type. The housing is a single steel casting that is reinforced by steel tubing pressed into the internal bores. The drive shafts are special alloy steel, triple heat treated. The standard gear ratio is 10.2:1. The front axle is a drop forged I section, the heavy steering knuckles having taper roller bearings fitted to the spindles and the knuckle pivots are mounted with annular ball thrust bearings. The bearings are protected from dust and provision is made for adequate lubrication. All the steering connections are fitted with hardened and ground steel bushings. The arm and ball of the steering column are above the axle and the drag link and tie rod are back of the axle.

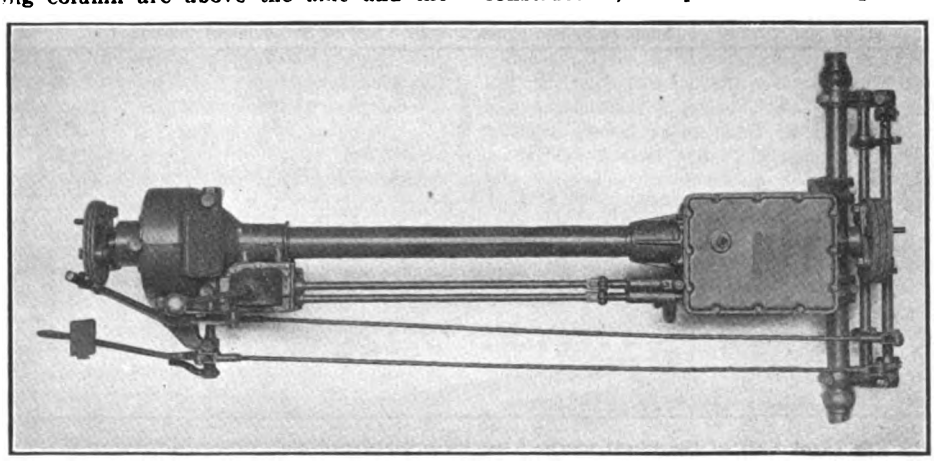
The frame is constructed of cold pressed steel channel section, seven inches wide with four-inch webs, and is 38 inches wide and necked to 34 inches ahead of the driver's seat. This is suspended on semi-elliptic springs, the front set being 46 inches long and three inches wide and the rear set 56 inches long and four inches wide. The eyes of the front springs are bushed for ¾-inch bolts, the front eyes of the rear springs bushed for 1¼-inch bolts, and the rear eyes for one-inch bolts. Rebound springs equal to about a quarter the thickness of the main springs are bolted to the tops, this construction being designed to take the driving and torque and braking stresses through the rear springs. The spring bands are machined accurately and are seated into the spring pads of the axles, practically keying them, and the thrust is taken by these bands. The spring clips for the rear springs are one inch diameter and for the front springs ⅝ inch diameter, and all are heat treated and have no angular corners.

Other Chassis Construction Details.

The wheels are wood, artillery type, the rear set having 14 rectangular spokes 3½ inches thick and the front wheels 12 rectangular spokes 2½ inches thick. These are shod with 36 by five-inch single solid tires forward and 36 by six-inch dual tires rear.

The steering column is set at an angle of 35 degrees at the left side of the frame, and the steering post has unusually large bearing surfaces, with a lever arm of triple heat treated vanadium steel fitted with a 1¾-inch detachable ball. The bearings, both radial and thrust, are very large and there are means for adjustment of all of them. The hand wheel is 22 inches diameter with a five-arm spider. The drag link is a ball and socket tubular type, with double springs to absorb shock, adjustable for length, both ends adjustable for wear and the ball sockets are protected by grease filled leather boots.

The control is by foot pedals for the service and emergency brake, a hand throttle lever under the steering wheel, and gear shifting and emergency brake levers in the center of the footboard. The brakes are internal full wrapping construction, all parts interchangeable,



The Combination Clutch, Torque Tube, Transmission Gearset, Brake Shafts and Control Levers in a Unit, an Exclusive Feature of Highway Design.

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the shoes being 20 inches diameter and 2½ inches wide. The brake rocker shafts are interchangeable.

The chassis is equipped with driver's seat, running boards, front fenders, metal-faced front bumper, hood fitted with springs to provide free movement of the flexibly mounted radiator, Maxim silencer on the muffler, electric head, tail and search lights, electric horn, complete set of tools, jack, oil can and electric starter. Statement is made that in developing the starting system no attempt was made to use a standard unit. The engine was placed for 24 hours in a temperature lower than zero and the degree of torque necessary to start it when absolutely cold was determined. Then a unit of sufficient power was selected. The generator is a separate unit with a capacity adequate for starting and lighting if the battery is given the attention that will keep it in good condition.

The driver's seat is wide enough to seat three comfortably and is well cushioned and the compartment is fitted with fore doors and a deep cowl covers the dash. Much attention has been directed to insuring lubrication at minimum care, all of the moving parts of the chassis subject to wear being fitted with bushings that may be renewed as worn. Even the brake levers are bushed. There are no grease cups, all parts requiring lubricants being fitted with large oil cups holding six days' supply for normal use and having wick feed, and these are accessible without reaching under the chassis.

The wheelbase of the truck is 159 inches, the forward tread 60½ inches and the rear tread 67 inches. The overall width is seven feet, the overall length 243 inches, the height from ground to top of the frame is 32 inches.

The price for the four-ton chassis is $4800 and for the five-ton chassis $5600, f. o. b. Chicago.

TRAYLOR CO. ADDS TRUCK TO LINE.

The Traylor Engineering Co., Allentown, Pa., is planning to add a series of motor trucks to its tractor product, and will also increase its present output. Both trucks and tractors are to be made to new designs, the latter to be a high-speed light model improvement of the sample tractor that the company has been building.

VITA MANUFACTURING CO. TO ERECT NEW PLANT.

A building that will be the first unit of a plant to be constructed by the Vita Manufacturing Co., Cleveland, O., is now being erected in West 117th street, near Madison avenue. The structure is to be two stories, 252 by 132 feet, and of reinforced concrete with a velvet face brick front. The building is not to be divided by partition walls and the construction is such that additional stories can be added when desired. In the rear will be a garage. The appearance of the completed structure is shown in the accompanying sketch.

The Vita Manufacturing Co. was organized by George D. Rogers to manufacture and sell the Rogers magneto, and he is the president; Thomas S. Husk and J. T. Hervey are vice presidents; Charles Ammerman, secretary; H. E. Schuler, treasurer, and David Reinchl general manager. The directors are the officers named and Charles R. Clapp, treasurer of the National Supply Co., and W. S. Judson of the Judson Printing Co., both of Cleveland.

MOLINE IRON WORKS ADDITION.

The Moline Iron Works, Moline, Ill., maker of castings for cars, trucks, tractors and agricultural implements, is to erect an addition to its plant, to cost $200,000. It will consist of a malleable foundry, 110 by 400 feet and an enameling and finishing building, 110 by 360 feet, of steel and glass with cement tile roofs. Approximately 250 men will be employed in the new plant, which is expected to be in operation by the first of the year.

LESSARD NOW WITH NEWALD CO.

L. P. Lessard, assistant sales manager of the Parker Motor Truck Co., Milwaukee, has resigned to accept a similar position with the M. D. Newald Co., Wisconsin distributor of the Stewart truck in that state.

The Goodyear Tire and Rubber Co., Akron, O., is to build a $100,000 building at Regina, Sask., Canada, to be used as distributing branch, general headquarters and warehouse.

ANNUAL MEETING U. S. LIGHT AND HEAT CORPORATION.

At the annual meeting of the stockholders of the United States Light and Heat Corporation, Niagara Falls, N. Y., the following directors were elected: R. C. Caples, E. H. Gold, J. E. Kepperley, C. L. Lane, C. O. Miniger, J. O. Moore, B. J. O'Reilly, J. A. Roberts, G. G. Shepard, J. Allen Smith, J. N. Willys.

The board organized with the following officers: Chairman, John N. Willys; vice chairman, E. H. Gold; president, J. Allen Smith; vice president and general manager, C. L. Lane; vice president, R. C. Caples; treasurer, B. J. O'Reilly; secretary, R. H. Van Nest; assistant secretary and assistant treasurer, T. G. Swannie.

ADDITION FOR DUFF MANUFACTURING CO.

The Duff Manufacturing Co. of Pittsburgh, Pa., is constructing an addition to its plant in that city. The new building is to be of brick and steel, 160 by 80 feet, and will follow standard Austin-industrial construction. It is designed to house the forge shop and heat treating department, and provision has been made for installing 16 steam hammers, with an equal number of trimming presses. The heat treating department will be equipped with furnaces of the latest type, burning either oil or gas.

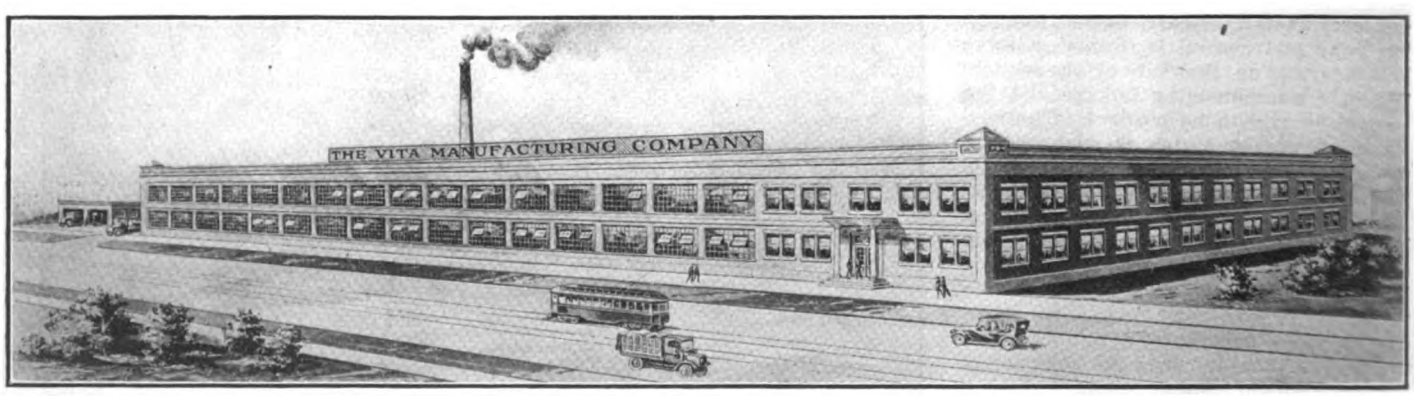
The completion of this new forge shop, about Oct. 1, will enable the production of Duff jacks to be greatly increased.

OLYMPIAN'S NEW PRODUCTION MANAGER.

C. J. Brethaur, formerly connected with the Commerce Motor Car Co., Buffalo, N. Y., and the Walden-Shaw Taxi Co., Chicago, has been made production manager of the Olympian Motor Car Co., Pontiac, Mich.

TRIANGLE TRUCK PLANT ENLARGED.

The Triangle Truck Co., St. Johns, Mich., is considering plans for the enlargement of its plant to double its present capacity. The addition of a new 3½-ton model to its present line of Triangle trucks is also contemplated.



The First Unit of the Plant of the Vita Manufacturing Co., Cleveland, O., Manufacturer of Rogers Magnetos, Now Being Erected. The Structure of Brick and Concrete, Has No Partition Walls.

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TRAFFIC ONE-TON TRUCK

SPECIALIZATION of one type of chassis is the policy of the Traffic Motor Truck Corporation, St. Louis, Mo., which is now producing a machine that is rated at 4000 pounds load capacity. The company has a new and well equipped plant and it is now building about 20 chassis a day. The chassis is sold for $1395 f. o. b. St. Louis, a price that is low as compared with other makes of the same rating.

The chassis is constructed of units that have been carefully chosen with reference to obtaining low operating cost and much attention has been directed to having extremely high factors of safety that the machine may be long enduring. The engineering has been very carefully developed and the assembly is exceedingly simplified, the units are extremely accessible and all the moving parts are well protected and thoroughly lubricated.

The construction units include Continental "Red Seal" engines, Covert transmission gearsets, Russel rear axles, Ditwiler steering gears and parts of similar quality.

The engine is a four-cylinder, four-cycle, water cooled, L-head, vertical type, having cylinder bore of 3¾ inches and stroke of five inches that is rated by the S. A. E. formula at 22.50 horsepower, but is claimed by the maker to develop 32 horsepower at 2200 revolutions. The cylinders are cast en bloc with the water jacket integral, but with the jacket head open, this construction insuring uniformity of thickness of the walls and that the water chambers will be thoroughly cleared, so that there will be maximum freedom of circulation.

Details of Engine Construction.

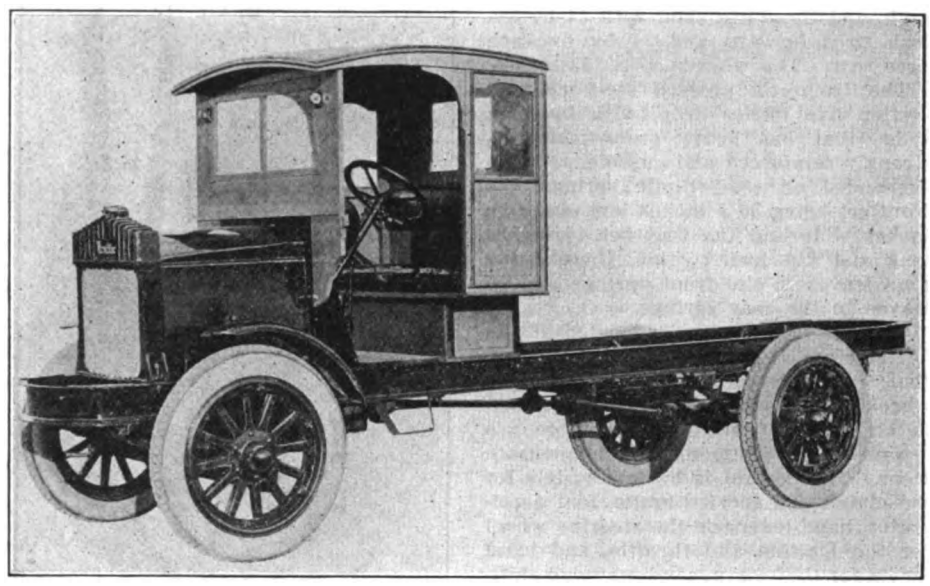
The head plate is a separate casting, with a longitudinal water channel from rear to front, which directs the movement of the water across the cylinder heads, this making for maximum cooling efficiency. The units are tested by hydraulic pressure before and after machining. They are rough bored, aged to obviate distortion and machining stresses, and are then reamed and ground to dimensions. The pistons are cast from the same quality metal and are turned and ground, care being taken to equalize the weight. The pistons are channelled for three diagonally split eccentric expansion rings, that are carefully fitted and are grooved to insure distribution of oil.

The crankcase is in two sections, the upper being cast from aluminum alloy with a central transverse vertical web carrying the center main bearing, and forward and rear extensions that house the timing gearset and the flywheel, the engine being designed for a unit power plant. The lower section of the crankcase is pressed steel and this is the crank chamber and the oil reservoir.

The crankshaft is a three-journal type, the journals being 2 3/16, 2 7/32 and 2¼ inches diameter from front to rear, and 3⅛, 2½ and 3 9/32 inches length in the same order, the total bearing length being 8 29/32 inches. It is drop forged from a special alloy steel with the flywheel flange and thrust flanges at the center bearing integral, and is machined, ground and heat treated. The camshaft is a steel drop forging and is a three-journal type with the cams integral. This is rough machined, case hardened and ground with master cams to insure accuracy.

Timing Gearset, Bearings and Valves.

The timing gearset gears are large with wide faces, are helical cut to drive noiselessly and are steel drop forgings and cast iron. The connecting rods are I section drop forgings that are heat treated. The crankshaft and crankpin bearings are nickel babbitt in bronze shells and the caps are retained with nickel steel bolts and are adjustable with laminated shims. The camshaft bearings are white bronze and the small ends of the connecting rods are bushed with phosphor bronze. The wristpins are steel tube, hardened and ground, that are seated in the piston bosses and are retained with locking devices.



The Standard Two-Ton Traffic Truck Chassis with Regular Equipment and a Driver's Cab That Is Furnished as an Extra.

The valves are 1⅝ inches diameter at the ports and are cast iron heads electrically welded to carbon steel stems. The valves are fitted in long guides. The valve tappets are a mushroom type that operate in renewable guides and they are fitted with adjusting screws and lock nuts.

The engine is cooled by a thermo-syphon circulation of water through the cylinder jackets and a large radiator with a cellular type cooling section that is mounted in a case with finned cast top tank and a bottom tank with cast side columns. The radiator is carried on heavy brackets and on coiled springs to absorb the road shocks and protect it against chassis distortion. Radiation is promoted by a draft from a 16-inch fan that is driven by a flat belt from a pulley mounted on an extension of the camshaft.

The lubrication system is a constant level and splash combination. The oil is drawn from the screened intake of a well by a horizontal plunger pump that is driven by an eccentric on the camshaft and is forced through copper tube to the three main bearings and the timing gearset. The overflow drains to the base of the crank chamber and is distributed by splash to the cylinder and piston walls and the cams and valve tappets. The camshaft bearings and the wristpins are lubricated by oil that is trapped in pockets cast in the crankcase and the pistons.

Clutch and Transmission Gearset.

The engine is combined with the clutch and the transmission gearset and is mounted at three points, forward on a trunnion and at the rear on arms cast integral with the upper section of the crankcase. The source of the ignition is a high-tension magneto that is driven by an outside shaft from the timing gearset and the fuel is supplied through a Carter carburetor from a 12-gallon gasoline tank located on the back of the dash.

The clutch is a dry disc type, having four 10½-inch plates that are faced with asbestos fabric, and it is practically self-compensating and requires but little attention. This is combined in a single housing with the Covert selective sliding gear transmission gearset that has three forward speed ratios and reverse. The gears are nickel steel, 13/16-inch face, and these are mounted on heavy carbon steel shafts and are carried on roller bearings. The pilot bearing is an annular ball type. The main shaft is splined The gear reduction is second, 1.77:1, low, 2.80:1 and reverse, 3.60:1. The first speed is direct drive.

Power Transmission System.

The power is transmitted through a two-section main shaft, with a Thermoid disc universal joint at the front end of the forward section. The rear end of the front section is carried in a Hyatt

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roller bearing that is carried in a self-aligning bracket. The shaft is coupled to the driving pinion of a Russel internal gear drive rear axle, this being a type in which the load is carried on a round dead member, and the drive is by a jackshaft mounted on this member, through pinions that mesh with internal gears enclosed by brake flanges and brake drums.

The housing of the jackshaft is malleable iron. The driving pinion, master gear, differential pinions, differential gears and internal gears are nickel steel, the jackshaft pinions are chrome nickel steel, and the jackshafts are pack hardened chrome nickel steel. The wheel spindles are equipped with Bower roller bearings, and the driving pinion shaft, differential gearset and jackshaft bearings are New Departure annular ball bearings.

Other Chassis Details.

The front axle is a steel drop forged I section, with drop forged nickel steel steering knuckles, with hardened steel pivot pins, and the spindles are fitted with Timken roller bearings. The wheels are wood, artillery type, with 12 spokes each, and these are shod with 34 by 3½ inch tires forward and 34 by five-inch tires rear. The wheelbase is 133 inches.

The frame is pressed steel channel section five inches deep, with two-inch webs, that has heavy cross members, strongly reinforced and gusseted, that is suspended on semi-elliptic springs, the front set being 36½ inches long and two inches wide and the rear set 46 inches long and 2½ inches wide, there being nine leaves in the front springs and 10 leaves in the rear springs.

The steering column is located at the left side and it is a worm and gear type, that is operated by an 18-inch hand wheel. The worm and gear are enclosed in an oil tight housing and there are means of adjustment to compensate wear. The control is by foot pedals for the clutch and service brake, foot accelerator, hand levers on the steering wheel for the ignition and throttle, and hand levers for the emergency brake and shifting gears in the center of the footboards. The service brake shoes are external contracting and the emergency brake shoes internal expanding, the former being 2½ inches wide and the latter 1¾ inches wide, operating on drums 14 inches diameter. The shoes are faced with Thermoid.

The chassis is equipped with driver's seat, running boards and fenders, oil dash and tail lamps, exhaust siren, sets of tools, tool box and jack. The chassis will be equipped with pneumatic cord tires for $225 additional.

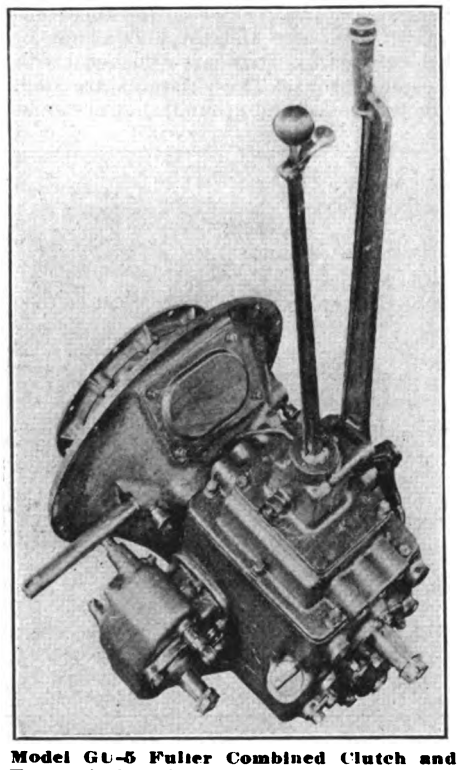
TORONTO TRUCK DEMONSTRATION POSTPONED.

The Ontario Motor League, of which W. G. Robertson is secretary-treasurer, made tentative plans for a motor truck demonstration to be held through sections of the province adjacent to Toronto, to take place this month, but because of conditions determined to defer it, so the event will probably not take place before next spring.

FULLER MODEL GU-5 TRANSMISSION GEARSET.

The Fuller & Sons Manufacturing Co., Kalamazoo, Mich., which is one of the best known concerns in the power vehicle construction unit industry, is specializing the production of transmission gearsets, the greater part of which are designed for truck building, although some of them may be used in passenger cars.

The model GU-5 gearset is combined with a clutch and is designed for unit mounting with four-cylinder engines up to 350 cubic inches piston displacement for trucks, and for larger engines for passenger car service. The clutch is a multiple disc type, the discs being hardened saw steel faced with woven asbestos fabric. The clutches are practically self-compensating, long springs automatically taking up whatever wear may develop with use.



Model GU-5 Fuller Combined Clutch and Transmission Gearset with a 2A Power Takeoff.

The model G is the same size as the model GU-5, but it is an independent type, designed for mounting amidships in the chassis. Annular ball bearings of extra large size are used throughout all gearsets. The gears are 6-8 pitch. The main shafts are four-spline types, carefully heat treated and ground. The gears and shafts are 3½ per cent. nickel steel and are of large size to have an additional factor of safety. Special care is directed to hardening all parts that are subjected to wear.

The housing of the transmission gearsets is designed so that a power takeoff may be fitted at either side, and on the model G units these may be installed with the drive shaft at either the front or the back as may be desired. The takeoff has the standard 1⅛ inches S. A. E. taper connection.

NEW PLANT FOR WALDEN-WORCESTER, INC.

Work has been begun erecting a new plant for Walden-Worcester, Inc., wrench manufacturer, in Shrewsbury street, near Aitchison, Worcester, Mass., which will be completed Jan. 1 and will cost $250,000. The first unit will be reinforced concrete, four stories, 333 by 60 feet. Later on a one-story structure having 12,000 square feet of floor area will be erected in the rear of the main building. The new building will have a frontage of 333 feet and the walls will be 80 per cent. steel sash to obtain the highest degree of lighting.

The private and general offices will occupy 10,000 square feet of the upper floor and will be reached by a separate entrance. Half of the remainder of the upper floor will be given over to employees' service rooms, including the hospital. The factory administration offices will require 5000 square feet of the second floor. The remaining area of the building, save the shipping and receiving departments on the first floor, will be devoted to manufacturing, tool rooms, stock rooms, etc. The shipping and receiving departments will be reached by a 14-foot concrete drive from the rear. A spur track from the Boston & Albany railroad will be extended to the works.

The one-story building will include the power house, the nickel plating and hardening departments and the garage. The power house will be equipped for burning oil fuel, but the greater part of the plant machinery will be driven by electric power supplied from an outside source. The contract has been undertaken by the W. F. Kearns Co., Boston.

The company is now operating in two buildings, the shipping department is in another location and the main office is in still another building, a condition that has been a very material obstacle to administration and production. For this reason every endeavor will be made to occupy the new plant as quickly as possible. Walden-Worcester, Inc., is the personal development of Warren S. Bellows, general manager, who acquired some basic patents for the manufacture of wire-handled socket wrenches and began production in 1907 in a shop employing six men. The company now employs 160 men in its shops and this number will be increased to 250 in the new plant. The company now has sales agencies in New York City, Chicago and San Francisco, and a large staff of salesmen. Its products are necessities for those using power vehicles.

BOWSER STORAGE SYSTEM.

A little folder, illustrating and describing the Bowser battery storage system for lubricating oil, is being sent out by S. F. Bowser & Co., Inc., Fort Wayne, Ind. This is so arranged as to show one, two or three outfits, or a battery of four tanks, so the prospective buyer may understand that he can buy as many units as he requires, and how the units of any of the various capacities line up in uniform manner.

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PNEUMATIC OR SOLID TRUCK TIRES?

By G. D. Wilcox, Director Sales and Advertising, Commerce Motor Car Co.
(From data compiled by the Goodyear Tire and Rubber Co., Akron, O.)

NEVER before in the history of the motor truck industry has any proposition presented itself which had greater possibilities than do pneumatic cord truck tires. Many years have been spent in the development of this tire, with the result that today we have a product fully beyond the experimental stage and meeting with great success in the truck tire field. All the advantages of the pneumatic cord tire for trucks center around two fundamental qualities—cushioning and traction.

Cushioning—Reduction of truck repairs and truck depreciation. Reduction in load damage.

Traction—Greater daily radius of operation. Savings in fuel and oil.

Cushioning.

Compressed air enclosed in cord tire construction provides the best cushion ever discovered for transportation purposes. It is the cushioning that evens truck action, that smooths its travel—not merely over bumpy going, but over the heavier rolling, rugged and stony roads. The result is a reduction of your repair bills, less time spent in costly lay-ups, less depreciation of truck, minimum breakage of fragile goods. The cushioning of the pneumatics shows saving:

(a) In trucks. (b) In hauling time. (c) In loads. (d) In roads.

Owner records show the extent of the first three as follows:

In City and Intercity Service.

"No repairs in eight months, formerly every month on solids," U. S. Naval Academy, Annapolis, Md.

"Upkeep reduced 75 per cent," Joplin Hardware Co., Joplin, Mo.

"Upkeep less than half," The Myer & Frank department stores, Portland, Ore.

"Saved 12 to 24 bottles every trip," Price Bottling Works, Price, Utah.

"Do not need to case up products (candy)," Kived Bros., Springfield, Mass.

In Farm Service.

"Reduced shrinkage of cattle shipped," Edw. Shipporiet, Scheding, Neb.

"Big saving in delicate plants," Germain Feed and Plant Co., Los Angeles, Cal.

"Enables better prices on perishables," Tart Bros., Fruit Farm, Provo, Utah.

"Repairs in two years not greater than monthly when solids were used," Smith's Dairy Farm, Aberdeen, Wash.

"Make profitable the marketing of fancy berries," Elson Farm, Marshfield Hills.

In talking to those who haul fragile merchandise, such as glassware and the like, the Westinghouse Glass Co. furnishes a good example of the cushioning qualities of these pneumatics.

"The Chicago branch of this company conducted a test, covering a long period, in which it was determined the percentage of breakage in Mazda lamps transported by three different methods."

"Average breakage, by freight or express, 11 per cent.; by truck on solids, 15 per cent.; on pneumatic cords, 4 per cent."

The Effect on Roads.

"Careful observations by highway engineers have shown that solid tired trucks tend to increase the cost of highway upkeep, even on hard surface highways. On the other hand, trucks on pneumatic cord tires have no more effect than the lightest passenger tires."

"Also, the vibration of solid tired trucks produced greater strain on bridges—trucks on pneumatics roll smoothly across, causing least jarring and shaking."

"As definite knowledge on this subject is accumulated, it is expected that the road effect of truck tires will develop into an important factor in determining the type of tires on most trucks used on our highways."

Comfort to Driver.

"In no case should we overlook the



George D. Wilcox, Director, Sales and Advertising, Commerce Motor Car Co.

driver as a factor in this situation. It has been found that truck drivers after riding on pneumatic cord tires have refused to work on trucks equipped with solids. Users report that the big pneumatic cord tires improve the working spirit of drivers, causing them to take more pride in their accomplishments and to be far more willing to work overtime if necessary. He is willing to give his pneumatic cord tires more care to keep them on his truck.

Traction.

"The pneumatic cord tire has a broad wearing surface, plus a positive grip on ground surface. The non-skid feature of the pneumatic cord tire enables uninterrupted travel through sand, snow, mud or on ice. Such conditions cause hard edge solids to slip and stall. Consequently the pneumatic tired truck has greater earning power, for it can be used all year, in general service and off the road hauling particularly in farm service. Users records give a concrete idea of the traction advantages."

In City and Interurban Service.

"Travel where trucks on solids will not go," Dayton-Wright Aeroplane Co.

"Give traction in any weather," Troy Garage, Troy, N. Y.

"Make deliveries regardless of weather conditions," F. W. Albrecht, Akron, N. Y.

"The only tires that ran all winter," C. H. Wilson, Utica, N. Y.

In Farm Service.

"Run 12 months; solids only four months of year," Mont. Young, Duquesne, Utah.

"Navigate cranberry marsh lands," T. H. Rudd, Retreat, N. J.

"Go anywhere on the farm," G. George, Rushville, Ind.

"Their traction alone in deep sand is worth the price," Valdosta Motor Co., Valdosta, Ga.

Greater Daily Radius of Operation.

"Trucks on pneumatic cord tires can maintain their usual rate of speed over rough sections on which solid tired trucks must slow down."

"In addition it has been noted that pneumatic tired trucks cover more distance and carry more loads on good roads in a day. They enable the truck owners to cut down labor cost and unit mile cost while increasing the territory and number of customers served."

"In increasing the daily radius of operation pneumatic cord tires enable trucks to maintain their usual rate of speed most of the time. They do increase the minimum speed of trucks, and the average speed of units, formerly on solids, usually is considerably higher as a result. Cushioning and traction save that slowing down over bad stretches that is necessary on solid tires. Pneumatic tired trucks are most active in traffic, quicker at the get way and sometimes squeeze in and out of tight loading and unloading spaces. Impossible for solids."

"Some users say that they handle twice as many loads, others that they do their hauling in half the time on these tires. Of course when you figure comparisons between solids and pneumatics, charging against the solids the lay up due to repairs and tie ups due to bad weather, you may find that the pneumatics sometimes do 100 or 200 or 300 per cent. more hauling."

In City and Intercity Service.

"Four trips daily of 28 miles each, twice as many as solids," W. F. Taubel Co., Inc., Riverside, N. J.

"Ten hours as against 16," Akron Lumber Co., Akron, O.

"Twenty per cent. increased range of operation and business," Wardrobe Laundry Co., Los Angeles.

In Farm Service.

"Run completed in five hours, took eight on solids," Germain Seed and Plant Co., Los Angeles, Cal.

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"Collected eight tons milk, only five on solids in good weather—none in bad weather," Union Dairy Co., Rockford, Ill.

Saving in Fuel and Oil.

"The high resiliency and easy rolling qualities, experience proves reduces the fuel and oil consumption with pneumatic cord tire equipment. It has been noticed there is least variation in the amount of fuel consumption over bad and good roads. This fluctuates greatly in solid tire trucks. Note following figures based on a year's time."

In City and Interurban Service.

"Reduces gas consumption 25 per cent," Lubric Oil Co., Cleveland, O.

"Saves two gallons daily or 30 per cent.," American Brewing Co., New Orleans, La.

"Fuel saving is 30 per cent.," Akron Lumber Co., Akron, O.

"Gas consumption is 10 per cent. less," Clyde Line Passenger Express, Miami, Fla.

In Farm Service.

"Getting 12 to 14 miles to gallon," Longtime Ranch, Loomis, Cal.

"Average only 3½ gallons on 40-mile trip through sand," Eatinger Bros.' Ranch, Cetford, Neb.

"Average 17½ miles to gallon of gas," Chas. A. Grube, Plattsburg, N. Y.

Here are some figures on mileage.

In City and Intercity Service.

"Twenty thousand to 27,800 miles," M. Berg & Son, St. Paul, Minn.

"In good condition at 14,400 miles," Keltz Bros., Inc., Detroit, Mich.

"Twenty-two thousand miles of uninterrupted service," L. G. Rawling, Boston, Mass.

"Up to 16,000 miles," Wardrobe Laundry Co., Los Angeles, Cal.

"Up to 15,000 miles," C. J. Henner Ref. Co., Rochester, N. Y.

In Farm Service.

"Up to 34,185 miles," Smith Dairy Farm, Aberdeen, Wash.

"Fourteen thousand miles of hard work," Huntculits Wagon Co., Aberdeen, Wash.

"Fifteen thousand to 20,000 miles without interruption," Santa Grudis Ranch, Kingsville, Tex.

"Truck went for 18,000 miles and looks good for 25,000 miles," Union Dairy Co., Rockford, Ill.

"Every motor truck gives successful operation today, if provided with more power than it could use for more than 10 per cent. of the time. In other words, from 30 to 75 per cent. of the power developing ability of the engine is not used 90 per cent. of the time during which the truck is in operation. This excess power, however, is needed for a start up a steep hill, or pulling through deep sand, mud or snow and for an occasional high speed spurt."

"How can the truck owner avail himself of this excess power so seldom used and turn it into profit producing energy? If he must pay the interest charges, depreciation and other overhead costs of a truck capable of climbing a 40 per cent. grade and just have occasion to drive it on smooth, level streets, he is eventually overlooking some means for increasing the efficiency of his truck."

BETHLEHEM REPRESENTATIVES.

The Bethlehem Motors Corporation, Allentown, Pa., manufacturer of Bethlehem motor trucks, has recently appointed the following distributors and dealers throughout the United States:

Bradley-Barton Sales Co., 2103 So. Salina street, Syracuse, N. Y.; Bagnall & Rankin, Columbia, S. C.; E. L. Cameron Auto Co., Dallas, Tex.; Reed Motor Co., Fort Fairfield, Me.; Etewah Motor Co., Gadsden, Ala.; L. E. Gallahorn Co., Reno, Nev.; Van Horn & Hottenstein, Towanda, Pa.; Climax Motor Sales Co., 31st and Market streets, Wilmington, Del.; Sweet Water Auto Co., Green River, Wyo.; A. L. Petris, Yuma, Col.; Equity Mercantile Association, Limon, Col.; M. J. Reaburn, Allen, Kan.; Arnall & Williams, Elk Falls, Kan.; E. H Lake, Chillicothe, Mo.; J. W. Taylor, Keytesville, Mo.; A. W. Martney, Corwin, Kan.; A. M. Simpson, Chester, S. C.; Kreischer Automobile Co., Hempstead, L. I., N. Y.; W. P. Snow, Ainsworth, Neb.; Wilde's Garage, Pittston, Pa.; Watkins Motor Co., Dublin, Ga.; F. W. Raoul, Asheville, N. C.; Wade Leonard, Yadkinville, N. C.; Crown Garage (George Mattice), Chillicothe, Ill.; J. W. Betson, Morton, Ill.; Ned R. Brown, Burlington, Col.; J. H. Hollenbaugh, Cheyenne Wells, Col.; Max Reiche, Haxtun, Col.; Atwood Equity Cooperative Co., Atwood, Kan.; Atlanta Carriage Co., Atlanta, N. Y.; W. E. Daugenbaugh, Woolstock, Ia.; F. A. Ruth, Cunningham, Kan.; Overland Sales Co., Sumter, S. C.; Crawford & Ashby, Fayetteville, Tenn.; Community Garage, Passaic, N. Y.; Robert L. Tinker, Hudson, N. Y.; Hand & Lester, Armour, S. D.; Carpenter & Pierce, Troy, Pa.; Clifford E. Jones, Hugo, Okla.

CONTINENTAL AUTO PARTS CO. MOVES.

The Continental Auto Parts Co., manufacturer of the well known line of shop equipment, industrial trucks, etc., has moved from Knightstown to Columbus, Ind., into the plant formerly occupied by the Janney Manufacturing Co. The new quarters are completely equipped with a foundry, blacksmith shop, wood working department, paint shop, machine shops and a large warehouse with railroad connections. The floor space afforded is 75,000 square feet, six times as much as was occupied at the Knightstown factory, and providing much needed room for increase in production and development of new lines.

OPENS DETROIT BRANCH.

The Highland Body Manufacturing Co. of Cincinnati, O., has opened for the convenience of truck manufacturers in Detroit, a branch in that city in charge of P. H. Willis. The Detroit branch includes a large warehouse where both Highland Standard bodies and cabs and a stock of "Everyday" farm bodies will be carried subject to the order of local truck companies.

SALE OF ARMY TRUCK TRAILERS.

The director of sales of the United States War Department announces that the surplus property division of the office of the quartermaster general of the army is offering for sale, under sealed proposals, 75 rubber-tired trailers, located at South Kearney, N. J., bids for which will be opened by the surplus property officer, zone supply office, 461 Eighth avenue, New York, at 10 o'clock on the morning of Sept. 30.

These trailers are of the drop frame, reversible type and were made for heavy hauling. They have four wheels, with solid rubber tires pressed on, drop forged axles and spindles of nickel steel. The chassis weight is approximately 5500 pounds and the carrying capacity of the trailers is about 10,500 pounds, the springs being of extra heavy construction and similar to the springs used on five-ton trucks. The trailers have a wheelbase of 156 inches, a ground clearance of 12 inches, and are fitted with couplers at each end. The tires are 36 by 6 inches.

The trailers may be inspected before bids are submitted by applying to the surplus property officer at the above address. All bids must be accompanied by bond, certified check or other security acceptable to the government, to the amount of 10 per cent. of the total bid.

Particulars and special bid forms may be obtained from the surplus property officer, zone supply officers in any of the following cities: Boston, New York, Baltimore, Philadelphia, Newport News, Atlanta, New Orleans, San Antonio, El Paso, Jeffersonville, Ind.; Chicago, St. Louis, Omaha and San Francisco.

NEW RULING ON ACCESSORIES TAX.

Interpretations of the new ruling on the imposition of Federal taxes on accessories and parts have been announced by the National Automobile Chamber of Commerce and the Motor and Accessory Manufacturers' Association.

The new ruling modified the system of taxing accessories and parts, including tires and inner tubes, so that these parts may be sold to manufacturers without the payment of a tax. However, the parts thus sold must be utilized by the purchasing manufacturer in making a complete car or machine, the tax falling then upon the completed machine. On the other hand, the impost becomes due when the goods are sold to a dealer, person or firm who will not use the parts in manufacture. In this way the evil of double taxation is obviated.

NEW OFFICIALS FOR FIELD MANUFACTURING CO.

F. J. Bosma, formerly district representative for the Parry Manufacturing Co. of Indianapolis, has been appointed sales manager for the Field Manufacturing Co., maker of commercial bodies, with headquarters at Owosso, Mich. The former sales manager, A. L. Ditter, has been made general sales manager.

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"THE ULTIMATE MOTOR TRUCK WHEEL."

"The Ultimate Motor Truck Wheel" is the title of an extremely interesting book published by the Dayton Steel Foundry Co., Dayton, O., that contains 58 pages, well illustrated with sketches and half tone engravings. The book is handsomely designed and admirably printed and bound, and is suited for the library of any engineer.

It presents a large volume of extremely useful information of wheels, and it sets forth the advantages of Dayton steel wheels designed for truck service. The book is divided into four sections, the first treating of the evolution of the vehicle wheel, the second of the motor truck wheel problem, the third the construction of Dayton steel wheels and data developed by engineering and service tests, and the fourth statements from engineers and other sources that substantiate the claims made for Dayton steel wheels.

Comparisons made of data determined by the United States Bureau of Standards to show the values of different types of wood and metal wheels are especially interesting.

SAFETY OF COUNTRY DEPENDS ON TRANSPORTATION.

George D. Wilcox, director of sales and advertising for the Commerce Motor Car Co., Detroit, advocates that the rural express lines now in operation should be extended and new ones organized.

"Motor express lines increase the food supply," says Mr. Wilcox, "by furnishing regular transportation for our farm products. They stimulate the farmer's efforts by the knowledge that regular transportation for his farm products is handy. They enable the farmer to avoid driving to town, increasing his time on the farm. This enables the farmer to obtain goods from town on the same day of the order. They generally facilitate traffic between the farmer, the market and the consumer. The safety of our country depends on transportation."

WESTERN MICHIGAN MOTOR TRANSIT CO.

The Western Michigan Motor Transit Co. has obtained a charter from the Michigan Public Utilities Commission and will shortly engage in highway transportation in that state. The corporation has been organized by Casper C. Hayward, for himself personally and as trustee, Paul C. Pomeroy and H. Munroe Dunham, all of Grand Rapids.

The company is to establish warehouses and haul freight between Grand Rapids, Hastings, Holland, Muskegon, Fremont, Grand Haven, Allegan, Hart, Shelby, Ionia, Greenville, Belding, Kalamazoo, Lowell, Big Rapids and Howard City. The company will operate 15 trucks. The company is capitalized at $100,000. The cost of transportation is estimated a cent a mile a 100 pounds.

Ice Cream Delivery by Semi-Trailer Big Economy

Experience covering more than four years with the utilities of semi-trailers would seemingly justify the conclusions reached by Robert Johnson, superintendent of the Arctic Ice Cream Co., Detroit, with reference to the type of vehicle that is most economical. Applying this experience to his own requirements he says that "just as the motor truck naturally supplanted the horse and wagon, so will the semi-trailer truck unit supersede the motor truck in the transportation of ice cream."

The company does a large business, the volume being such that during the hot months 10 semi-trailers are used, the delivery being made in the city and the suburbs. The first semi-trailer was built by the Fruehauf Trailer Co. to a design that was developed with wagon experience, and the first tractor was a short wheelbase 1½-ton chassis. Normally the load would be approximately three times the rating of the chassis, but much heavier freights were hauled with the tractor.

After about three months' use of this first outfit the company ordered seven additional Fruehauf semi-trailer units and seven tractors, this bringing the total to eight. These were used until this spring and then two more tractors and semi-trailers were ordered, so that the present equipment is 10 of each type unit.

The bodies are full panel or enclosed with a standing top or roof, the sides being framed so that when sheathed inside and out there is a three-inch air space to serve as insulation. The forward ends are separated from the remainders of the bodies by partitions and the compartments are accessible through doors in the fronts. The compartments are refrigerators in which the brick and special creams are carried and these are used as receptacles for empty cans.

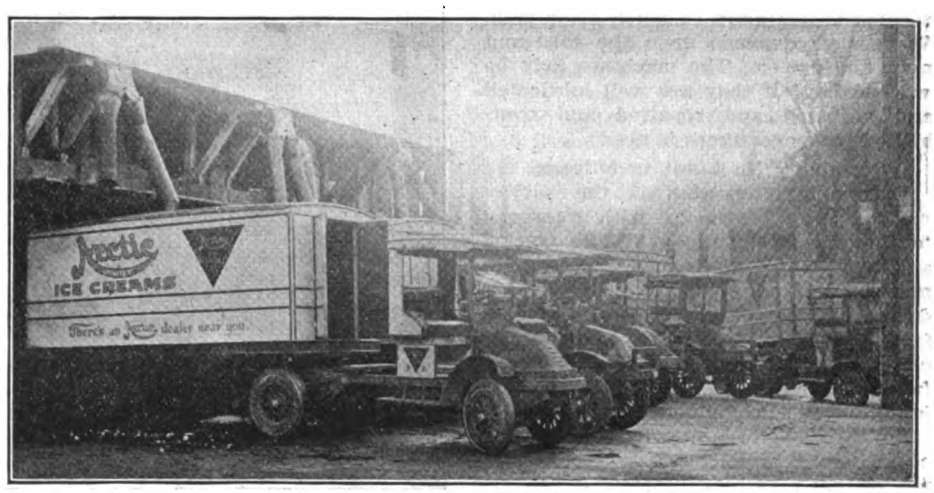
The floors of the front and rear compartments are water tight and pitch from front to rear so that the brine from the ice and salt will drain clear of the frame and metal of the running gear. The tops of the trailer bodies are used for receptacles for salt and cracked ice, and these are filled before the bodies are loaded. The cans of ice cream are loaded in tiers and then ice and salt is run over them through spouts from the roof compartments. The weight of these is sufficient to pack the cans without tamping.

The tractors are all 1½-ton machines and while these may appear light units they have been found satisfactory in hauling the semi-trailers with loads ranging from six to eight tons. The average gasoline consumption is six miles to the gallon, and claim is made that were these units replaced with five-ton trucks the fuel would average about three miles to the gallon. The routes are so planned that the machines loop from the plant and the last delivery is made a short distance from it, so that there is but little distance to be driven to load again. This has reduced the unloaded mileage to minimum. Because of the method of loading but little time is required between route trips at the plant and the productive or moving time of the units is much larger than the average in similar work.

According to Mr. Johnson the semi-trailers are a necessity in the business and the operations could not be on the present scale with other equipment. He estimates the operating cost of a semi-trailer that hauls from seven to eight tons to be less than the cost of a five-ton truck. The fuel expense is about half and the tire cost is comparatively small. The same tires have been used for three years on the semi-trailers and apparently are good for a much longer mileage.

The initial cost of the equipment is also worthy of consideration. The 10 tractors and semi-trailers, having a total capacity of 70 tons, represent an investment of approximately $37,000, and 10 five-ton trucks, which could haul 70 tons only by overloading, would cost about $49,000, or about $12,000 more.

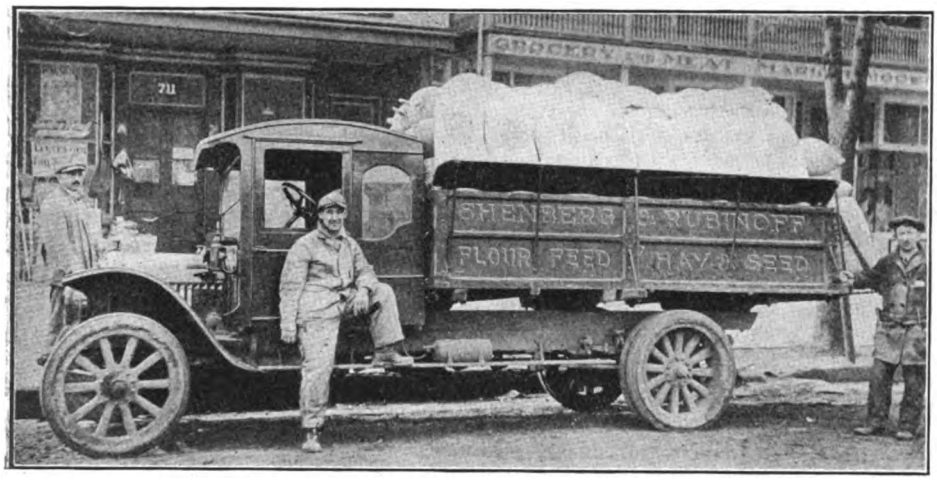
The King Trailer Co., Ann Arbor, Mich., has opened a factory branch at Dallas, Tex., in charge of A. G. Williams, southwestern sales manager.



Part of the Fleet of 1½-Ton Tractors and Fruehauf Semi-Trailers with Special Type Fruehauf Semi-Trailer Bodies Operated by the Arctic Ice Cream Co., Detroit.

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TRUCKS WITH 100,000 MILEAGE



White Two-Ton Truck, with Record of More Than 100,000 Miles in the Service of Shenberg & Rubinoff, Vineland, N. J., Dealer in Flour and Feed.

SERVICE life is a subject that vitally concerns every truck owner. There are those who believe that when a machine evidences considerable wear purchasing a new vehicle is better economy than making considerable repair, this being often based on the theory that there will be need of extensive replacement of parts if good adjustment is to be obtained, for worn and new components cannot well be fitted and obtain what may be regarded as normal functioning.

There are others who maintain that if a machine is kept well adjusted and lubricated that the period of usefulness will be much longer than the five years or the 100,000 miles that are fixed as the ordinary limitations by truck manufacturers or engineers. Many trucks have been kept in good repair and have been used for as many as 10 years and have been driven much in excess of 100,000 miles, and strangely enough these vehicles have been used in hard service. They have invariably received good attention.

The customary depreciation is based on five years or 100,000 miles for general accounting, and when the entire valuation has been written off and the trucks can be used for a longer period, all the service is distinctly so much clear gain. Very much depends upon the care and upon the driver. The machines may be worked hard if they are well lubricated and adjusted and repaired and overhauled whenever there is need.

Seemingly No Limit to Mileage.

Extremely interesting is the survey made by the White Co. with reference to the mileages made by White trucks, and statement is made that truck service must be determined on the basis of miles driven and not by age. As a matter of fact a considerable number of these machines have exceeded 100 000 miles—in fact, so much exceeded it that this total is no longer a maximum.

Several instances have been pointed out where White trucks have been distances that may be considered extremes, but these totals do not mean the end of serviceability, for the trucks are still in use. One of these, a chassis equipped with a passenger carrying body and owned by Alexander & Walling, Fresno, Cal., has been driven more than 500,000 miles, which was made in a service that necessitated daily drives much longer than would be made with trucks, so that while this is remarkable it does not represent ordinary usage.

Results with Single Units.

Attention may be directed, however, to two White trucks used by Armour & Co., at Spokane, Wash., which have more than 100,000 each to their credit, and a White truck used by the East Ohio Gas Co., Cleveland, O., has been driven more than the traditional 100,000 miles. Another machine owned by the Los Angeles Gas and Electric Corporation, Los Angeles, Cal., has a mileage of 131,728 to its credit, and the Tri-State Telephone and Telegraph Co., St. Paul, Minn., has a record of more than 200,000 miles.

No service is more exacting than that of newspaper delivery or distribution, and the News-Scimitar of Memphis, Tenn., and the Daily News of St. Paul, Minn., have each a White truck that has a credit of more than 100,000 miles, and the machine in the service of the Montreal Gazette, Montreal, P. Q., has more than 140,000 miles and is giving good satisfaction.

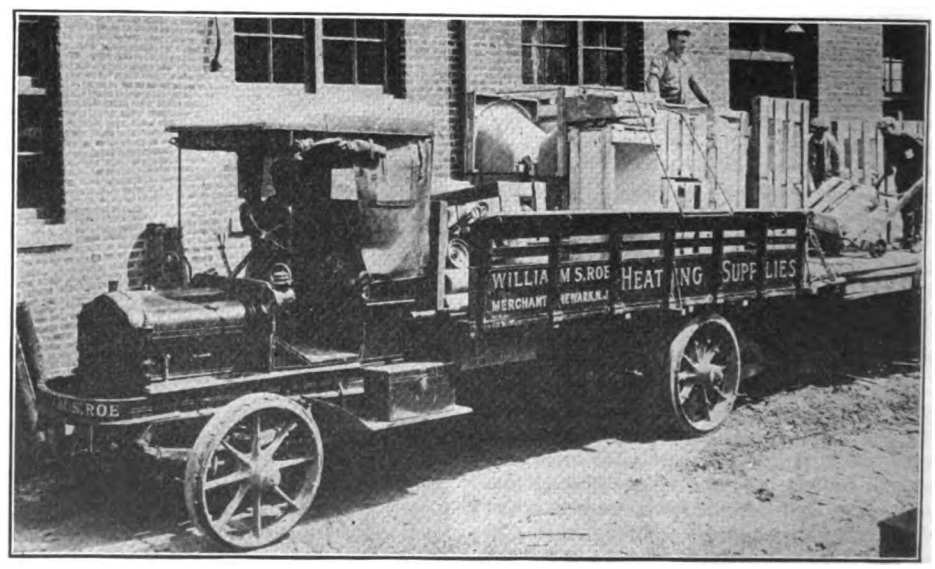
In laundry work, which has numerous stops for collection and delivery, the wear is excessive as compared with other service, and in this a machine owned by Wouters' Laundry, Chicago, has a total of more than 300,000 miles; the Westfield Laundry of Westfield, Mass., has one with a record of more than 200,000 miles, and two trucks owned by the Waltham Laundry of Waltham, Mass., has each more than 100,000 miles.

Entire Fleets Equal These Records.

One might assume that these are rare instances, when the total number of machines produced is considered, but fleets exist in which the different units have been driven more than 100,000 miles. The Telling-Belle-Vernon Co., Cleveland, O., manufacturer of ice cream, has three trucks that have each a record of more than the total specified. Five trucks owned by Bullock's department store at Los Angeles, Cal., have mileages in excess of 100,000, and the Emerick Bus Line Co., Bellefont, Pa., and Madary's Planing Mill of Fresno, Cal., each have fleets of six White units that have credits of from 120,000 to 150,000 miles for each truck. The seven trucks in the service of Sterling & Welch, furniture dealer, Cleveland, O., are down for from 102,000 to 140,000 miles.

Going on into larger number of units the White Transit Co., Plymouth, Pa., has 15 White trucks that have mileages that range from 132,500 to 242,500 each, and Gimbel Bros., New York City, operating a department store, have 25 trucks out of a fleet of more than 50 that have each been driven more than 100.000 miles. The Bradford Baking Co., Los Angeles, Cal., owns 26 trucks, each of which has an average of more than 102,000 miles.

The total number of trucks specified that have been driven more than 100,000



White 3-3½-Ton Truck, Owned by William S. Roe, Newark, N. J., That Has Been Driven More Than 135,000 Miles and Is Good for a Much Greater Mileage.

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miles is 100, and while exact figures cannot be given as to total because of the variability of fleet unit mileage, there is no doubt of the fact that these machines have an aggregate to their credit that will approximate 12,500,000. This is an average of 125,000 miles, or five times around the earth for each of the 100. And not only this, these trucks are in service and there is no reason to assume that the limit of serviceability has been reached.

Seemingly there is abundant reason for the statement that a truck that is systematically inspected, adjusted and repaired and overhauled whenever necessary, and well lubricated, will endure for years.

AUTOMOBILE ENGINEERS TO INSPECT GERMAN TRUCKS.

Through the courtesy of Gen. Charles B. Drake and his associates of the Motor Transport Corps of the United States War Department, an opportunity will be afforded to compare German motor trucks with those made in this country. Lieut. Col. A. J. Slade of the department has brought 47 of the foreign trucks to this country for the purpose of study and investigation and up to Oct. 15 engineers of the motor car and truck industry are invited to inspect them at Camp Holabird, near Baltimore, Md.

Concerns desiring to send representatives can obtain passes admitting them to Camp Holabird by communicating with Charles B. Drake, Brigadier General, Motor Transport Corps, War Department, Seventh and B streets, Washington, D. C.

It is expected that the information gained from this inspection, together with suggestions made, will be placed at the disposal of the automotive industry generally, as well as of the Motor Transport Corps officials.

HARTFORD AGAINST NEW TRUCK LINE.

The plan suggested by the New York Central railroad to establish a motor truck express freight line to operate on a definite schedule between New York and Hartford, has been disapproved by the Hartford Chamber of Commerce. The transportation committee of the chamber holds that present systems are adequate to all demands that may be made upon them and that Hartford already has rail and water transportation facilities and express trolleys to all intermediate points, and that the roads of the state are already overburdened with heavy motor truck travel.

This disapproval of the New York Central project is not at all surprising when it is considered that included in the membership of the Chamber of Commerce transport committee, are the division superintendent of the New Haven road and the general manager of the trolley company. As the New Haven system is interested in the trolleys and boat lines, it controls the usual lines of freight transportation all over the state save by motor trucks.

NATIONAL AUTO SHOWS TO BE BIGGEST EVER HELD.

Several important factors combine to indicate that the national exhibitions of the automobile industries the coming winter will be the greatest in the history of these enterprises.

The holding of the displays of the two departments, passenger and commercial, at the same time will insure a greater attendance of dealers and prospective buyers. The manufacturers will have a greater variety of improvements to exhibit than for many years, and there will also be important additions to the family of exhibitors.

Then, too, for the first time in history, ample housing facilities have been provided, this condition having been brought about by the addition of two of the largest structures of their kind in the world to the list of buildings heretofore occupied. It will, therefore, be possible to hold, for the first time, passenger and commercial departments of the shows the same week, both at New York and Chicago. The Grand Central Palace will be available for the passenger car section of the New York show.

By reason of the added space the exhibits will be more comprehensive than formerly. The unprecedented demand for cars, aside from all other considerations, indicates a record attendance, and the management is already assured of the presence of buyers from abroad.

The dates and places are as follows: Jan. 3-10, 20th annual exhibition of passenger cars and accessories, Grand Central Palace, New York; Jan. 3-10, national exhibition of commercial cars and accessories at Eighth Coast Artillery Armory, Kingsbridge road, New York; Jan. 24-31, 20th annual national exhibition of passenger cars and accessories, Coliseum and First Regiment Armory, Chicago; Jan. 24-31, national exhibition of commercial cars and accessories, International Amphitheater, Chicago.

There will be no important changes in the plans for the passenger car shows except that the exhibits will be confined strictly to passenger cars and their accessories. All exhibits connected with commercial cars will be limited to that department.

The Eighth Coast Artillery Armory is reached by elevated road from 42nd street and Sixth avenue, or by subway from the Grand Central Station. It is said to be the largest assembly room, without interior posts, in the world. The size of the main hall is 300 by 600 feet. There is also a lower floor nearly half as large. The spacious mess hall, which is also on the first floor, will be used, during the show, as a restaurant.

The International Amphitheater in Chicago consists of a main arena and two wings. It is located at Halsted and 42nd streets, and is the scene of the annual stock show, horse show and similar events. Excluding the less desirable space, it is expected that about 120,000 feet will be used. It is reached by elevated road from the center of the city and the transportation facilities from other parts of the city will be ample.

Application blanks for space may be obtained from S. A. Miles, manager, 7 East 42nd street, New York City.

AUTOMOTIVE ENGINEERS DISCUSS SCREW THREAD PRACTISE.

The Society of Automotive Engineers recently held a meeting for the purpose of securing the best and most comprehensible information as to what is most desirable to be recommended in regard to screw thread practise in the automotive industry of this country. The attendance was representative of the various branches of this and allied industries. Reports were made on the work of the National Screw Thread commission, recently created by Congress, and the data, secured during the recent visit of the commission to Great Britain and France, were submitted.

It was decided that, in order to accomplish the most of value to the automotive industry and to secure the best consensus of opinion for the consideration of the National Screw Thread commission or any other similar body, the best procedure would be to gather from representative manufacturers, in practical shop form, definite information as to present practise.

The Society of Automotive Engineers is assured of the support of the manufacturers in its field, and has enlisted the services of men of excellent training and long practical experience in screw thread and shop work to act as its committee to direct the collection of the industrial data mentioned. The personnel of the committee is as follows: Chairman, Paul W. Abbott, Lincoln Motor Co.; R. P. Smith, Packard Motor Car Co.; Lyle K. Snell, Willys-Overland Co.; Alexander Taub, General Motors Co., and W. K. Jamison, Domestic Engineering Co.

NEWBURN NOW ASSISTANT SALES MANAGER.

The Parker Motor Truck Co., Milwaukee, Wis., maker of Parker trucks, announces the appointment of C. C. Newburn as assistant sales manager.

Mr. Newburn has been identified with the automotive industry for about 12 years. He was with Morgan & Wright before the amalgamation of that concern, and his work in the truck line has been with the sales departments of Service, Diamond T, Corliss, Panhard and Traffic trucks. He has been with the Parker Motor Truck Co. for nearly a year and is well and favorably known by Parker dealers and distributors.

SHUMAN ADVERTISING CO. MOVES.

The Shuman Advertising Co., trade and technical specialists, Chicago, has moved from the Westminster building to larger quarters at 117 North Dearborn street.

T. M. Kingsbury, recently of the United States Department of Agriculture, has become farm service manager for the Midwest Engine Co. He was formerly editor of the Indiana Farmer.

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GENERAL SERVICE STATION

Designed to Meet the Needs of an Average Combination Sales, Storage and Repair Business with Every Necessary Facility.

THE accompanying sketch illustrates a medium sized station, designed to have sufficient space and the convenient arrangements that will meet the demands of the average dealer who is desirous of establishing a suitable home for the sales and general service of one or two cars. It is thoroughly modern and equipped with all conveniences for the efficient handling of repairs of any nature at short notice.

As to the general nature of the structure it is one story high, measuring 50 feet in width by 100 feet in length, fireproof construction with the exception of the roof, which is of the slow burning mill type. If fire laws in certain vicinities call for an absolute fireproof structure a cinder roof may be installed at a slight additional cost.

In the front of the structure is located the office, about 20 by 20 feet, and this is divided by a driveway or entrance from the show room, which is located just opposite the office. The office has an entrance from the street flanked by two windows, as can be seen from plan, while the show room entrance is from the inside, and this has a large light area unbroken except for the mullion bars of the window.

The entrance to the garage proper is through a driveway at the center, having swing type doors, that are 10 feet high. Next is the garage proper, which is designed for the storage of customers' or transient cars, and this is 50 by 60 feet, an area ample to house 15 to 18 cars. This space is lighted and ventilated by three large skylights, as shown on the plan, and these should be of good quality galvanized metal, having wired glass throughout. At the rear and at the left of the storage space is a wash stand, this being an essential for a first class station. The main floor is of concrete dressed with granolithic, fully drained, insuring at all times a good dry surface.

At the rear of the building is located the repair shop and machine shop, and a toilet and storage area have also been provided.

The repair department is 18 by 23 feet, being equipped to handle work of any nature. There are two large work benches as shown, also a sink and plenty of space for installation of closets beneath or above the benches. This department is lighted by a large skylight taking in nearly all the roof area.

Next is the machine shop, which is a very important division of any service station, and which can be made a very satisfactory source of income if equipped with the facilities for serving regular customers, and which will attract patronage from a considerable area if the character of the work is good. If such a department is to be operated it ought to be made as profitable as is possible, and obviously much depends upon the arrangement of the benches and machine tools. There should be no congestion that will retard work and sufficient space to handle any reasonable volume of business that may be offered.

The machine shop shown in the plan is 12 by 18 feet, having room for a lathe or two, power drill, a small shaper and emery wheel, also a forge and anvil. This is lighted by a large skylight as shown covering the entire roof. Access is from main garage directly opposite the entrance to the repair department.

Provision has been made for a toilet and wash room at the rear, this leading off of the repair department. Directly in front of the toilet is a storage closet, where grease, oil, etc., may be kept.

Owing to the general construction being fireproof, only materials that are non-combustible can be used and as these must have a first class fire resistance the following stock is suggested:

A foundation of concrete, suitable in size to carry all load placed upon it, and a spread footing is suggested to insure against uneven settlement. (See section.) A good mixture for this type of work is a 1:3:5 formula, which gives first class results for mass concrete structure. The size here shown is a 16-inch foundation, with 16-inch piers and a 12-inch wall; the piers and walls are of brick or its equivalent. The front or facade is of terra cotta with ornamental treatment as shown. This can be so tinted that a marked individuality is obtained which will help in the advertisement of one's business.

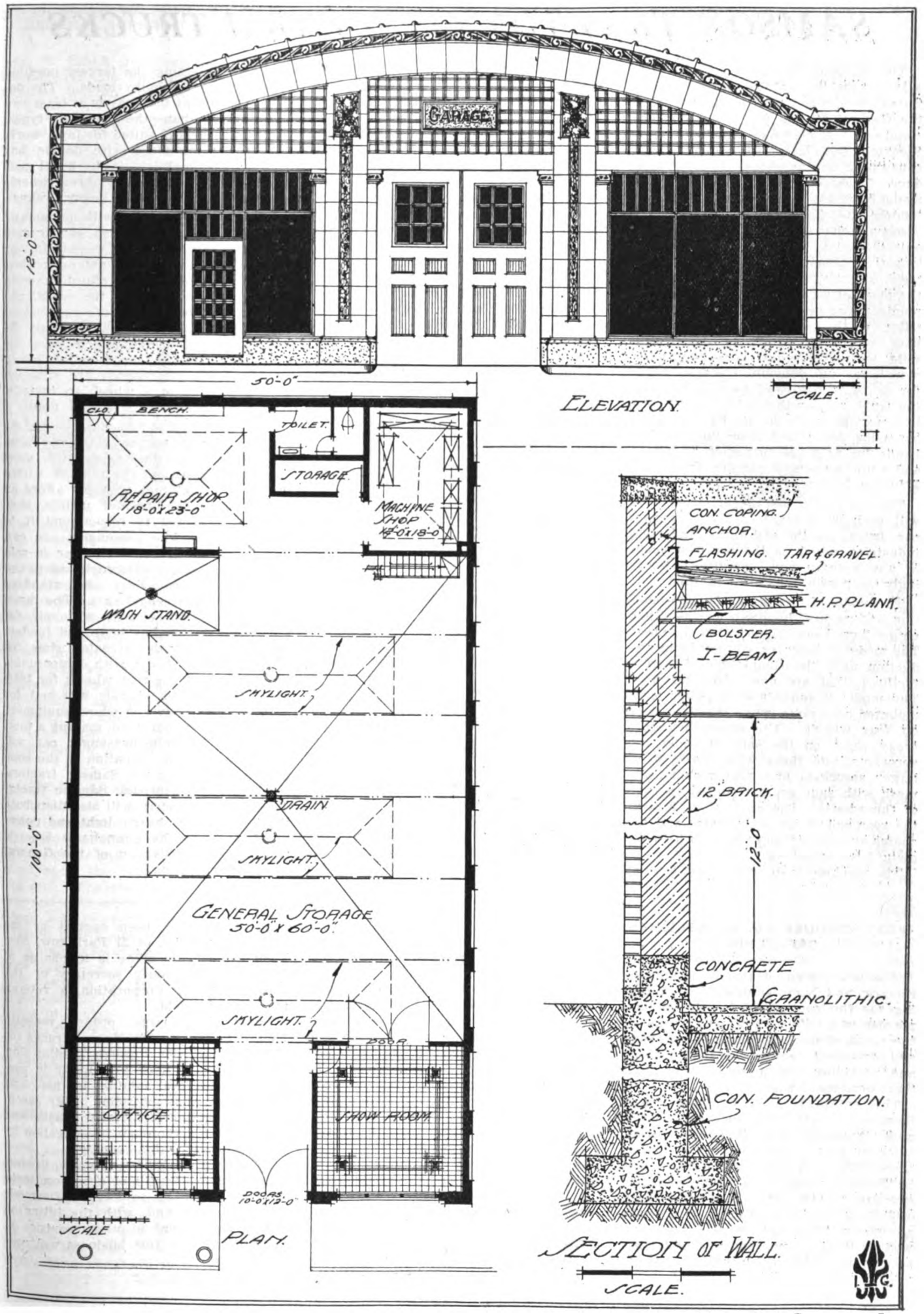
The roof construction is plank covered with tar and gravel, supported by steel girder beams spanning the entire width. If required by law in certain districts, these beams can be covered with cinder concrete, the same composition that the roof would be composed of under the fire laws in fire districts.

A heating plant can be placed in the compartment at rear of building beneath machine shop, which is reached by a stairway as shown just outside of the machine shop wall.

The approximtae cost of the station, considering average prices for labor and material and where the excavation is all earth, will be from $7000 to $8000, but will differ somewhat according to location, cost of transportation, etc.

Any further information concerning this design can be obtained by addressing the Architectural Department of this publication, specifying the detail desired.

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SAMSON TRACTOR CO.'S FARM TRUCKS

The Samson Tractor Co., Janesville, Wis., a subsidiary of the General Motors Corporation, which was originated when the General Motors Co., truck division, acquired the Samson Tractor Co., of Stockton, Cal., has made announcement concerning the machines it is to produce. These include a two-plow tractor, model M, which sells without platform or fenders f. o. b. Janesville, at $650; the Samson model D "Iron Horse," a tractor unit that may be adapted for use with animal implements, and for which attachments will be later available to take the place of complete independent implements, which sells for $450 f. o. b. Janesville; a three-quarter-ton farm truck chassis that sells for $550 f. o. b. Janesville, with double box body and extension bases and demountable cleat bands for field use, furnished as extras; a 1¼-ton truck chassis that sells for $950 f. o. b. Janesville, with double box body and extension bases and demountable cleat bands for field use furnished as extras, and a nine-passenger car that is sold for $750 f. o. b. Janesville.

The company has departments that will each be devoted to the passenger car, truck, tractor and farm implement industries, which is the broadest scope of any concern now operating. Seemingly the possibilities are unlimited.

The model M tractor is now in production and several hundreds of these machines have been shipped from the plant. The model D, however, will not be in production until the completion of factory facilities that are now being installed. The model D consists of a power plant mounted on a main frame that is carried on four wheels. The engine drives a cross shaft on the ends of which are sprockets, and these with chains drive larger sprockets and spur pinions that mesh with spur gears mounted on each of the wheels. The cross shaft is near the rear end of the main frame and the chains are carried forward from it to the main drive sprockets.

The machine is driven from a seat at the rear of the main frame and controlled by a pair of levers. Very broad claims are made for its utility. Statement is made that it may be used with any animal implement, wagon, sulky plow, grain drill, mower or binder, and driven and controlled from the seat of the unit. When these are no longer serviceable they may be replaced with attachments designed for use with the model D for each field work. For instance, by installing a hopper it will serve as a power drill; with a cutter bar it will become a tractor mower. Two pairs of cultivator rigs make it a tractor cultivator. With a corn picker it will be a tractor picker that will pick two rows of corn at once. Similar attachments will later be available for harrowing, casting, drilling, corn planting, cultivating, mowing, raking, potato digging, corn picking, so that a farmer will not have to invest in independent implements, as the cost of the working attachments will be small in comparison with the prices of complete machines. In each instance power will be used instead of animals. Besides these uses the model D tractor can be used for field and road hauling.

There is but little difference between the two truck chassis. The design is somewhat unusual in the arrangement of the control members, although the principles of operation are unchanged. The steering column is located at the forward end of the left side member of the chassis frame and the clutch and service brake pedals and the hand brake and control levers are at the left side of the engine. The driver's seat is brought forward to the rear of the engine, and the engine hood is in the center of the floorboards, which are combined with the front fenders. The driver's seat is at the left side of the engine. The conventional dash is lacking and the head lamps are mounted on the deck at either side of the radiator. There is, of course, no protection such as would be afforded by a dash and windshield.

The construction, however, is with the object of obtaining the largest possible body capacity for bulky loads. The design is such that the body is at least two feet longer than the standard types, which is especially suited for farm work. The trucks are fitted with double box bodies. The final drive is by bevel gear from a unit power plant. The rear wheels are fitted with unusually heavy brakes.

The wheels are shod with pneumatic tires. The wheels are so constructed that when the trucks are worked in soft fields or yielding surfaces extension rims can be attached, which afford traction when the tires sink into the earth, and if there is further need the rear wheel extension rims can be fitted with demountable cleat bands, which carry the loads and relieve the tires of heavy stresses. The cleat bands are attached with two bolts to a wheel, so installation or removal is very quickly done.

The Samson nine-passenger car is designed and built purposely for the farmer, it having sufficient capacity to meet any requirement and the price is within the reach of any man who can afford an automobile. The greater utility, however, is expected to recommend it to farm owners. The passengers are carried three on a seat. The car is sold complete, with top, windshield, spare tire carrier and practically the standard equipment of passenger cars. The three-quarter-ton truck chassis will sell for $550, with double box body and fenders for $585, and with extension rims for front and rear wheels, with demountable cleat bands for the rear wheels for $660. The 1¼-ton truck chassis will sell for $950, and the body and wheel equipment for $40 and $80 additional, making a total of $1070. The nine-passenger car will sell for $750. The intention of the company is to market the Samson tractors, trucks and cars through Samson tractor dealers. This concern will also distribute the Sunnyhome electric light and power plant, built by the Sunnyhome Electric Co., Detroit, a division of the General Motors Corporation.

WESTINGHOUSE CO. ESTABLISHES CAFETERIA.

The latest plan of the Westinghouse Electric and Manufacturing Co. in caring for the comfort of its 20,000 employees in its East Pittsburgh works, is the establishment of a modern cafeteria and restaurant, seating over 3000 persons and providing well prepared food on a "service-at-cost" basis.

This enterprise is to be housed in a three-story, buff brick building, already under construction on Braddock avenue, adjacent to two main entrances to the shop. The first and second floors will be devoted solely to a "help yourself" cafeteria service with a seating capacity of 2500, while the third floor will include a modern table service restaurant, as well as the kitchens, and an auditorium seating over 1000 which will be used for meetings of the various organizations and committees.

The most modern conveniences of the culinary art will be employed. The cafeteria counters will have moving belts to carry the trays of food placed upon them, allowing the passing diner to readily make his selection. There will be a huge refrigerating plant on the first floor, which will not only cool the food in the refrigerators, but will also provide cold drinking water at numerous fountains scattered through the cafeterias, as well as manufacture ice and make the frozen dainties used on the menu.

It is expected that this new restaurant will be in operation the first of the year.

MACCAR OPENS EXPORT OFFICE.

Because of the rapidly growing demand from abroad for Maccar trucks, an export office has been opened by the Maccar Truck Co. at 21 Park row, New York City. This office is in charge of M. S. May, formerly secretary of the Roman Trading Corporation, a veteran in the export field.

Among the large orders recently booked is one for 100 Maccar trucks for the H. I. Jacobson Russian Trading Corporation, to be used principally in connection with coal mining, oil field and other enterprises controlled by Mr. Jacobson. The order for Maccar trucks was placed after a thorough investigation by his engineers in this country.

Delivery has also begun on 40 five-ton trucks for Norway, and other contracts call for shipments to Sweden, Denmark and Columbia, and, with the lifting of import restrictions in other countries, it is expected that this business will constantly increase.

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V. M. SMITH SUPREME MOTORS GENERAL SUPERINTENDENT.

V. M. Smith has been made superintendent of the Supreme Motors Corporation, Warren, O., which is now perfecting its organization. He was previously to this connection with the Hudson Motor Car Co., where he was production manager of Essex engines.



V. M. Smith, General Superintendent Supreme Motors Co., Warren, O.

He was formerly general superintendent for the Continental Motors Corporation and he was before that association assistant superintendent for the Lycoming Foundry and Machine Co. at Williamsport, Pa., and he was prior to that assistant superintendent for the Mercer Automobile Co. at Trenton, N. J.

TRUCK SAVES $46.80 A DAY.

The Perkins Transfer and Storage Co., St. Louis, Mo., operates two five-ton Service trucks for the delivery of large rolls of paper to the various newspapers of that city. The rolls weigh 1350 pounds each and each truck carries nine rolls at a load, a little over six tons.

Horse drawn drays are also used to carry similar loads and the company has been interested to keep cost records of both methods of transportation. The figures include every charge properly applying to haulage, such as depreciation, repairs, supervision, etc., and show that it costs $1.85 to deliver each roll by truck as against $2.50 by horse. In other words, each truck saves its owner $46.80 a day.

ANDERSON MOTOR CO. ENLARGING.

The Anderson Motor Co. of Rock Hill, S. C., maker of Anderson Six motor cars, has awarded contracts to the amount of $200,000 for the construction of a steel and concrete building, 340 by 250 feet, equipped with new machinery. The company has also increased its capitalization from $2,625,000 to $3,625,000.

L. H. EARLE IS BUDA EASTERN REPRESENTATIVE.

L. H. Earle has been engaged as eastern representative for the Buda Co., Harvey, Ill., and offices have been established at 1216 Aeolian Hall, 33 West 42nd street, New York City. He was connected with the Continental Motors Corporation as designing engineer from 1911 to 1913, and from 1913 to 1916 as sales manager. He was before that connection chief engineer for the Abbott Motor Car Co., from 1909 to 1910, and he was with the Chalmers Motor Co. in 1908, being connected with the engineering staff.

He was in business under the trade name of Earle & Boggs, Inc., manufacturers' representatives, after leaving the Continental corporation, and in 1917 entered the United States army. He organized and developed the inspection service for Caterpillar tractors, used for artillery haulage and tanks, and was a captain in the Ordnance Corps when he was retired last spring.



L. H. Earle, Eastern Representative, Buda Co., Harvey, Ill.

NEWS OF THE TRAILERS.

The Trailmobile Co. of Cincinnati is bringing out several new models of its trailers. This company is erecting new factories at Oakley, O.

The Martin Rocking Fifth Wheel Co., Springfield, Mass., has built some new models of its two-wheeled trailer so designed as to track exactly in the track of the rear wheels of the towing vehicle and to obviate sidesway at high speed.

O. E. Byron, 908 Columbia building, Louisville, Ky., formerly manager of the Detroit Trailer Co., and later chief engineer and factory manager of the Lee Loader and Body Co., has organized a company in Louisville to manufacture four-wheeled, semi and pole trailers.

The Globe Improvement Co. of Buffalo, N. Y., plans to begin the manufacture of semi-trailers on a large scale in the near future.

H. F. HARRIS IS BETHLEHEM GENERAL MANAGER.

H. F. Harris has been made general manager of the Bethlehem Motors Corporation, Allentown, Pa., manufacturer of Bethlehem trucks and tractors. Mr. Harris is well known as an industrial engineer, he having been connected with the Everett, Studebaker, Maxwell and Overland companies in different capacities, and for the last two years he was associated with the Republic Motor Truck Co., Alma, Mich., serving as general sales manager the latter part of his connection with that concern and successfully completing several large undertakings. Statement is made that Mr. Harris' appointment does not imply any changes in the Bethlehem organization.



H. F. Harris, General Manager, Bethlehem Motors Corporation, Allentown, Pa.

PANHARD CHANGES NAME TO APEX.

The Panhard Motors Co., Grand Haven, Mich., announces that hereafter Panhard trucks will be sold, advertised and known as Apex trucks, and that the name of the company will be changed to Hamilton Motors Co. The new name, Apex, meaning the highest point, is suggestive of the goal set by the Hamilton Motors Co., the manufacturer claiming that it has reached the pinnacle in truck design and service.

With the change in name comes a change in the price of the truck and an increase in the dealer's discount. The 2½-ton Apex model, at $2475, will be made the feature, while the high standard of the one and 1½-ton models will be maintained.

McCOMB TO REPRESENT WEIDELY.

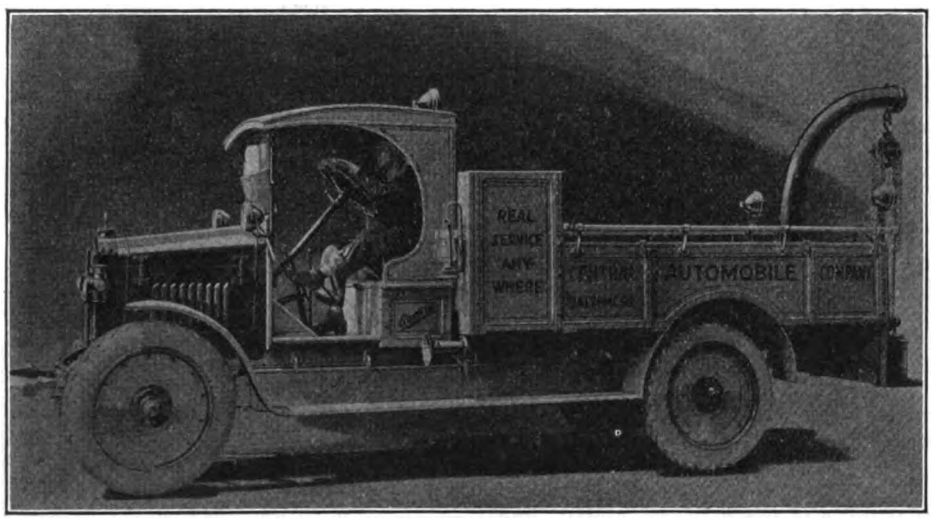
Henry G. McComb, with offices at 1790 Broadway, has been made New York representative of the Weidely Motors Co. Mr. McComb is one of the pioneers of the automobile industry and being an engineer, is well qualified to demonstrate the good points of Weidely design.

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ACASON SERVICE STATION EMERGENCY TRUCK.

A service station emergency truck, equipped with tools necessary for making any form of repair, has just been produced by the Acason Motor Truck Co., Detroit, for its Baltimore, Md., distributor, the Central Automobile Co. The machine is located at the station with a crew available either day or night, and it can be dispatched to any wrecked vehicle with the assurance that a permanent or temporary restoration can be made, or the machine brought in to the station where complete repair can be made.

The truck is a one-ton chassis on which is mounted a special type body. The chassis is constructed with a transmission gearset that differs with the standard units that has a gear ratio that will give higher speed, for time is of prime importance when responding to calls. The truck has a large crane that has capacity for lifting engines, wheels, axles or other units, or the end of a body or frame, or it may be used for transferring heavy freight or loading or unloading or for extricating mired vehicles. It is heavy enough to support the end of a machine that must be towed.



Acason Ton Truck Chassis Equipped as an Emergency and Wrecking Unit for the Baltimore Service Station of the Acason Dealer in That City.

The truck is fitted with a work bench and several power tools will be installed, and, of course, there is every type of hand tool that might be needed. The body is built with lockers for carrying shovels, picks, crowbars, pinch bars, etc., block tackle and cable for towing and hoisting and such spare parts as would ordinarily be used for repair work. The equipment includes three powerful adjustable electric lamps, electric lights for driving and a high powered horn.

BREEZE MANUFACTURING COMPANY'S UNIQUE TRADE BOOK.

Originality in catalogue making in any industry is almost unknown, but here is a trade that has never before had a catalogue printed in either popular or technical language.

The Breeze Manufacturing Co., Newark, N. J., maker of flexible metal hose, tubing and accessories, has just brought out an unusually interesting 36-page trade book dealing in detail with the products of this company. There is no catalogue published in this country on this subject and only one in a foreign, which was issued a number of years ago and contained nothing but figures and prices; no descriptive matter whatsoever.

The contents of this book, issued by the Breeze Manufacturing Co., includes description of metal hose in detail for every type and method of winding; it shows how it is applied and why, and what number of trades or industries use it. Being fully illustrated, the descriptive text is readiiy understood.

While there is hardly an industry that does not use flexible metal hose in some form, either bare, covered or reinforced, this book is especially dedicated to engineers, mechanical superintendents, factory managers, purchasing agents and students of mechanics, as it presents valuable technical information and furnishes the solution of many puzzling engineering problems.

The Breeze Manufacturing Co. will mail this catalogue upon receipt of a request on a business letter head, or will present it through one of its representatives.

AMERICAN POWER VEHICLES IN ENGLAND.

The British Board of Trade Journal states that, in the last 11 years, England has sent only 881 automobiles to this country, the value of which was $2,153,941, while in the same time the United States sent to England 41,182 cars, valued at $36,710,011.

Edwin A. Godley has resigned as general office manager of the Republic Motor Truck Co., Inc., and is succeeded by Glenn S. Crisp, chief accountant. J. V. Weeks has also resigned as superintendent of the chassis department, but his successor has not yet been named.

ELECTRIC VEHICLES AT ELECTRICAL EXPOSITION.

Practically every make of electric passenger car and motor truck, including small industrial trucks, will be exhibited at the Electrical Exposition of 1919, which will open in the Grand Central Palace, New York City, Sept. 24, for its customary 10 days run. In addition there will be numerous displays of the various accessories applicable to the electrical vehicle, ranging all the way from batteries to decorative lighting.

This will be the first show to be held in the Palace since it was taken by the government for use as an army hospital, and a large force of workmen is now engaged in restoring the exhibition floors to their pre-war condition, the principal task being the removal of, literally, miles of partitions.

Those engaged in the automobile business will have a particular interest in this Electrical Exposition because of the many exhibits of electrical devices for the garage and repair shop, and the wonderful demonstration of electric lighting and decoration for large show rooms.

STERLING OFFICIALS ABROAD.

E. M. Sternberg, vice president, and C. G. Hayssen, assistant general manager of the Sterling Motor Truck Co., Milwaukee, Wis., have sailed for Europe, where they will spend several months investigating the various phases of the motor truck industry in England, France, Belgium, Sweden, Norway, Denmark, Italy and other countries of central Europe. The trip may be extended to India and Australasia. Mr. Sternberg is a pioneer in the American motor truck field, and goes abroad for the purpose of getting first-hand information on European automotive engineering practises and manufacturing methods. Attention will also be given to the conditions under which motor trucks are used there with a view to determining what American builders should do to have their products meet foreign haulage demands and thus extend the market for American trucks abroad.

MACCAR DISTRIBUTOR AT BALTIMORE.

The Maccar Motor Truck Co. has been organized to distribute Maccar trucks at Baltimore, Md., with Frank W. Roseberry, formerly western sales manager for the Maccar Truck Co., and previously general sales manager of the Service Motor Truck Co., as president, and F. L. Criblet as secretary and treasurer. The company has established a service station at 1010 West North avenue.

One of the construction features of Maccar trucks is that the power plant includes as a single unit the engine, clutch, transmission gearset, radiator, pedals and dash, which can be removed as an assembly and another substituted for it in 30 minutes in the event of failure or damage.

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SHAFER BEARING CORPORATION STARTS WITH $1,000,000 CAPITAL.

The Shafer Bearing Corporation, has been incorporated at Chicago under Illinois law with $1,000,000 capital. Julius E. Shafer was elected president, George D. Bailey vice president and C. F. Ferguson secretary and treasurer, these officers to hold office for one year. The board of directors include the three men mentioned, Otto Cullman, president of the Cullman Wheel and Gear Co.; A. A. Worsley, lawyer; Louis A. Hippach, president and general manager of the Tyler & Hippach Plate Glass Co., and Charles F. W. Nichols, president of the Charles F. W. Nichols, advertising agent. Mr. Shafer was formerly secretary of the Makutchen Bearing Co., Mr. Bailey was president of the George D. Bailey Co., Chicago, and Mr. Ferguson was vice president and general manager of the George D. Bailey Co.

The company will manufacture roller bearings for trucks, tractors, passenger cars and general purposes to a new principle, it being claimed that the bearing is self-aligning and will equally resist any thrust or radial load and is adapted for any use. The new concern is a development of the George D. Bailey Co. and was organized to operate the greatly increased business, and the George D. Bailey Co. will continue its activities as the replacement division and will manufacture ball thrust bearings. The main offices will remain at Chicago and branches will be established at New York City, Minneapolis, Kansas City and other distributing centers.

PUBLIC MUST PAY FOR PLANT SPECIALIZATION.

H. W. Acason, president of the Acason Motor Truck Co., Detroit, is a staunch advocate of the theory that standard parts for motor vehicles, such as axles, springs, etc., can be better and more economically built by concerns specializing in their manufacture. "Trucks built from specialized parts are naturally the most up to date," declares Mr. Acason, "the reason being that the factory trying to make all its own parts cannot make changes until they have absorbed the cost of jigs and fixtures over a certain number of machines which the public must pay for."

TRAFFIC CO. ISSUES "HORSE SENSE."

"Horse Sense" is the somewhat original and catchy title of a house organ which made its initial appearance in August from the publicity department of the Traffic Motor Truck Corporation, St. Louis. It is edited by G. Elmo Holke, assistant advertising manager of the Traffic Corporation, and purports to be devoted to motor truck subjects and traffic throughcut the world. It is attractive in appearance and interesting as to contents, and should be a good "booster" for the sales organization of the Traffic Motor Truck Corporation.

WORLD'S LARGEST PISTON RING CO. EXPANDS PLANT.

On account of its rapidly increasing business, the Piston Ring Co. of Muskegon, Mich., has been compelled to expand its present plant, the contract having been awarded to the National Construction Co. of Detroit and Muskegon.

The Piston Ring Co., which is recognized as the largest piston ring maker in the world, makes piston rings for the leading automotive concerns, furnishing them in angle jointed, lap jointed or to special designs. Its present production is considerably more than a million rings a month. They are in universal demand for pleasure cars, trucks, tractors and aeroplanes. All rings are made from tough, close-grained gray iron, which receives the company's own laboratory analysis before being cast.

The Piston Ring Co.'s plant is equipped with an extensive variety of special machinery designed and patented by Mr. Johnson, the president of the company, and this has added to the strength and general quality of the product. All rings are individually cast and this patented process is under the company's control.

This is the second addition this rapidly growing concern has been compelled to build in the past few years.

GILBERT RESIGNS FROM AXLE CO.

Frederick C. Gilbert, vice president and director of the Timken-Detroit Axle Co., in charge of sales and publicity, who has been connected with that organization since its formation 10 years ago, has resigned and severed his connection with the company. No small part of the success of the Timken-Detroit Axle Co. has been due to Mr. Gilbert's efforts and he leaves with the good will and regret of his associates.

Prior to his connection with the Timken Co., Mr. Gilbert was for 14 years with the Pope Manufacturing Co. as general production manager of several of its plants, including the Pope Motor Car Co. of Toledo, afterwards sold to the Willys-Overland interests, and the Columbia Steel Co. of Elyria, O.

Mr. Gilbert will take a much needed rest before making any announcement of his plans for the future.

UNIQUE DEMONSTRATION METHOD.

In the Russel Magazine, published monthly by the Russel Motor Axle Co., Detroit, the editor, Allen C. Chambers, cites the following unique and effective method of demonstating the efficiency of the Russel internal gear drive axle. This was to show that this type of axle wastes less power and was originated by a western salesman.

He takes the heaviest models and has them placed on a level pavement. Then some one sits in the car and releases the clutch. Then the demonstrator crawls underneath the truck and with his hands moves the truck by turning the drive shaft. He shows that the truck can be started on "high" with about one-half a horsepower.

AMALGAMATED MACHINERY CORPORATION ABSORBS DOBLE.

The Amalgamated Machinery Corporation, Chicago, of which Lawrence R. Wilder is president, has combined with the Doble-Detroit Steam Motors Co. and the General Engineering Co., so that it has acquired the sole manufacturing rights to all products involving the Doble patents, including the Doble-Detroit steam passenger cars and Doble household heaters. Statement is made that the purpose is to begin production as soon as the plans can be completed.

The Amalgamated Machinery Corporation is composed of concerns largely engaged in the manufacture of engines, axles and other components for automotive construction, and was organized for the production of automatic machines used for making war munitions. It has a large and well equipped plant at 37th street and Racine avenue. The General Engineering Co. was formed for the commercial development of products under the Doble patents and the Doble-Detroit Steam Motor Co. was to build passenger cars, but production was deferred because of the war. The Doble household heater burner was developed without restriction, and this will be produced in large volume. Work is to be begun on Doble heaters and on steam cars. The Societie Francois Doble of Paris has been organized to build steam cars in France. The executive office of the Doble-Detroit Steam Motors Co. will be maintained in the Marquette building, Detroit, but the manufacturing will be at the Chicago plant. Morgan J. Hammers of the Doble-Detroit Co. and A. B. Frenier, the company's patent counsel, will join the Chicago organization, Mr. Hammers to be in charge of all engineering as related to Doble products.

THE DIFFERENTIAL IN THE MOVIES.

An example of how the motion picture can make an intricate mechanical subject simple to the lay public is given in a one-reel feature recently brought out by the Famous Players-Lasky Corporation. This was entitled, "The How and Why of the Differential," and explains this intricate mechanical device so that even the youngest motor car driver or the least mechanically inclined woman, can know the reasons for the differential and how it operates to save the rear axle from disaster.

This is done by animated technical drawings. In this particular instance, it is said, an artist went to an automobile factory and after a thorough study under experts, obtained a complete understanding of every phase of the differential. Then a scenario was written and hundreds of drawings of various parts of the differential were made. These drawings, accompanied by explanations written in the simplest of language, show how the differential operates. After the drawings have been finished and assembled in their proper sequence they were photographed by a motion picture camera. Then the film was cut and titled to insure complete clarity of exposition.

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EXPORTS AND IMPORTS INCREASE.

Statistics just issued by the Bureau of Foreign and Domestic Commerce, United States Department of Commerce, show marked gains in both exports and imports for the month of July, the seven months ending in July, and the 12 months ending in June, 1919, as compared with the corresponding periods in 1918. The summary is as follows:

Total imports, July, 1918, $241,877,758; July, 1919, $343,999,609; an increase of $102,121,851. Total imports for seven months ending July, 1918, $1,787,881,692; seven months ending July, 1919, $1,954,662,437; an increase of $166,780,745. Total imports for 12 months ending June, 1918, $2,945,655.403; 12 months ending June, 1919, $3,095,876,582; an increase of $150,221,179.

Total exports for July, 1918, $507,467,769; July. 1919, $570,082,915; an increase of $62,615,146. Total exports for seven months ending July, 1918, $3,481,694,379; seven months ending July, 1919, $4,628,570,498; an increase of $1,146,876 119. Total exports for 12 months ending June, 1918, $5,919,711,371; 12 months ending June, 1919, $7,225,084,257; an increase of $1,305,372,886.

FACTORY RADIATOR SERVICE.

The United Motors Service, Inc., has inaugurated at its New York City branch, 239-41 West 56th street, Harrison factory service on all types of radiators in addition to service on Delco, Remy and Klaxon electrical equipment. J. L. Elwood, general manager of the branch, states that there has been practically no radiator service, neither the radiator or power vehicle manufacturers giving this the attention that is believed necessary, for there is general recognition of the possibilities for radiator damage and there is no doubt the cooling sections wear more quickly than the other units of the assemblies.

The Harrison Radiator Corporation, Lockport. N. Y., has arranged with the United Motors Service, Inc., to establish a factory service at all its branches, and the inauguration of the departments is now progressing.

ACME TRUCK NOW HAS BAND.

The marked success of the Acme orchestra, made up of employees in the factory of the Acme Motor Truck Co., Cadillac, Mich., under the leadership of Howard Ballard. has now stimulated the formation of the Acme Motor Truck band.

This was organized a short time ago with the following officers: President and manager. J. H. Ballard; director, V. M. Ferris; secretary and treasurer, A. W. Stromberg. The band now has a membership of over 30 and not only has reflected credit on the company it represents, but has merited the support of the city of Cadillac, and its weekly concerts on the city park have become a feature. It has also been in demand for conventions and other special events.

Goodyear Salesmen Taught by Week End Schools

The traveling sales schools inaugurated by the Goodyear Tire and Rubber Co. have been so successful that the company has decided to continue them until all of the Goodyear branches have, been served. Up to the present time about 15 schools have been organized and there are approximately 75 branches in all. The object of the schools is to instruct all salesmen in salesmanship to the standard of the company. The school work is directed by Lake Jones, director of sales instruction.

The original policy of the company was to assemble the salesmen from the different districts at the main office at Akron at intervals and there advise them of the methods and policies of the sales department, but this necessitated the



Lake Jones, Director of Instruction of the Goodyear Salesmanship Schools.

men being absent from their territories and consequent interruption of their activities, so the plan of instructing them at their headquarters was adopted.

The schools are scheduled and the itinerary followed, a week being given to each city. The first three days of the week in any given locality the instructors make a thorough survey of the conditions and the last three days are devoted to instruction.

Statement is made that the credit men, service men and office managers can be included in the classes with the salesmen, and all can receive instruction in credits, policies, product and salesmanship in any given section without retarding the transaction of business to any appreciable degree, and experience has proven that all are substantially benefited in these classes.

Instead of allowing new men without knowledge of the products and sales policies to work to their own ideas and their conceptions of business, system and uniform knowledge has been found to be more productive and better satisfying to the customers. This has also been proven to develop greater efficiency and the plan of sales schools has been especially effective. In fact, even the best men have been improved by the course of instruction and the schools keep them uniformly informed and develop their enthusiasm. Statement is made that the schools establish broad gauged ideas of trade development and inspire the men with confidence that is essential to success.

MAXWELL-CHALMERS MERGER IS COMPLETE.

Financial arrangements for the merger of the Maxwell Motor and the Chalmers Motor companies, including a $10,000,000 note issue, have been completed recently. The securities of the two concerns will be exchanged for stock of the new corporation of no par value, in the following proportions: Maxwell first preferred, 120 per cent.; Maxwell second preferred, 66½ per cent.; Maxwell common, 70 per cent.; Chalmers preferred, 95 per cent.; Chalmers common, 15 per cent.

The notes to be issued will be convertable into the new stock. The conversion price of the notes is not disclosed, but it is understood it will be between 70 and 75.

PEERLESS TRUCK MOVES TO CLEVELAND.

The purchase by Cleveland interests of a large block of the stock of the Peerless Truck and Motor Corporation has occasioned the removal of the offices of that company from New York to the western city. A new board of directors has been elected, consisting of B. G. Tremaine, president; Walter C. Baker, T. W. Frech, William E. S. Griswold, E. W. Harden, L. H. Kittredge, Roland T. Meacham, G. B. Siddall, W. H. Staring, F. S. Terry, L. H. Treadway, Harrison Williams.

MERGER OF NEW ORLEANS DEALERS.

The Abbott Automobile Co. and the W. P. Parkhouse Co., New Orleans, have merged and will distribute Packard cars and trucks and Franklin and Chandler cars. The officers are: Chairman of the board, James Long Wright; president, F. Provost Breckenridge; vice president and treasurer, Ginder Abbott; vice president and secretary, W. P. Parkhurst, and vice president, Palmer Abbott.

INTERURBAN EXPRESS EXPANDS.

The Interurban Motor Express Co., Sioux City, Ia., has secured additional land at Fifth and Iowa streets, including a building, 150 by 150 feet, which it will remodel to meet its increasing business requirements. This company operates on a regular schedule over a number of routes and has recently added lines from Sioux City to Vermilion, S. D.; Rubie, Ia., and Brunsville, Ia.

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WISCONSIN PARTS CO. REORGANIZATION.

The reorganization of the Wisconsin Parts Co., Oshkosh, Wis., formerly the E. B. Hayes Machinery Corporation, manufacturer of Wisconsin axles, has been completed by the election of W. F. Rockwell, president; J. F. Hayes. vice president; Louis Schriber, treasurer; A. H. Chatley, assistant treasurer; E. J. Dempsey, secretary, and E. H. Rhyner, assistant secretary. Messrs. Rockwell, Schriber and Dempsey, with E. M. Morris and Harry Wall constitute the board of directors. Robert L. Murphy was appointed purchasing agent, vice L. Cash, resigned.



Robert L. Murphy, Purchasing Agent, Wisconsin Parts Co., Oshkosh, Wis.

Mr. Rockwell was formerly vice president of the Torbensen Axle Co., in charge of engineering and production; Mr. Schriber is vice president of the Old National Bank of Oshkosh and director of the First National Bank of Milwaukee; Mr. Dempsey is a member of Bouck, Hilton & Dempsey, lawyers, of Oshkosh; Mr. Morris is general manager of the R. McMillan Co.; Mr. Wall is of the Wall-Spaulding Lumber Co. and Mr. Hayes was formerly president of the E. B. Hayes Machinery Corporation.

Statement is made that the business of the company has doubled within three months and that extensive additions to the plant are contemplated.

ANDERSON JOINS OLDS STAFF.

William P. Anderson has joined the executive staff of the Olds Motor Works, Lansing, Mich., as assistant general manager. He comes to Lansing from the Wright Aircraft Corporation, New Brunswick, N. J., where he was general factory manager.

The Michigan Screw Co., Lansing, Mich., has awarded contracts for the construction of a three-story steel building, to cost $125,000. It will be 60 by 236 feet.

GENERAL MOTORS BUYS ROLLS-ROYCE PLANT.

The General Motors Corporation, whose ability to use and willingness to buy desirable manufacturing plants has been a noteworthy feature of the industry's reconstruction period, has acquired the title to the plant of the International Arms and Fuse Co., Bloomfield, N. J., just outside of Newark. In securing this property the big producing organization incidentally removed from the market a plant which had been regarded as practically certain to become the American factory for Rolls-Royce cars, since after an inspection of the offerings of many eastern cities the American representatives of the famous British company had come to regard the fuse plant most favorably. Delay in the transaction was caused by the need of referring the matter to England. Efforts are still being made by this company to acquire a plant in New Jersey, though a list of sites near Philadelphia was under inspection.

Details of the purchase could not be secured. Thus far the only activity at the plant is merely a clearing away of unnecessary traces of the machinery used during the war to turn out munitions. Although it is intimated that a definite purpose is in view for the plant's future, this has not been definitely adopted and is subject to change, not to be disclosed at this time.

IRON FOUNDRY TO BE BUILT AT LOUISVILLE.

The Illinois Malleable Iron Co., Chicago, capitalized at $2,500,000, is to erect at once a $500,000 plant at Louisville, Ky. Forty acres of land, belonging to the Merhoeff estate, at the intersection of Ash Bottom road and the Southern railway tracks, has been purchased. The plant is expected to begin operations by Dec. 1 and 500 hands will be employed. The output is estimated to reach between 6000 and 10,000 tons of malleable iron a year.

Although the various railroad, automotive, agricultural implement, wagon and other industries of Louisville require 7500 tons of malleable iron a year, there has heretofore been no concern in that city turning out that product, and it should also stimulate the location of new enterprises there.

EXTENSIVE BUILDING PROJECTS UNDER WAY.

The National Construction Co. of Detroit and Muskegon, Mich., which specializes the erection of automobile industrial plants, is building three extensive additions to factories at Muskegon. These are for the Piston Ring Co., said to be the largest piston ring makers in the world, the well known Continental Motor Co. and the Brunswick-Balke-Collender Tire Co. These contracts were awarded on the strength of the National Construction Co.'s enviable reputation for the thorough yet quick building methods employed.

DAVEY NOW BETHLEHEM SALES MANAGER.

Roy Davey has been advanced from assistant sales manager to general sales manager by the Bethlehem Motors Corporation, Allentown, Pa., with the resignation of W. E. Stevenson, who for a considerable time filled that position. Mr. Davey has had wide experience in selling and advertising. He was assistant advertising manager for the Acme White Lead Co. in 1904 and the following year joined the Burroughs Adding Machine Co. and was engaged in sales planning and promotions. In 1911 he went to the Packard Motor Car Co. as assistant manager of the truck division and in 1915 became sales plan director for the Thorsen-Seelye Advertising Agency of Detroit. He resigned this position the following year to become advertising manager for the Chalmers Motor Co. and in 1918, when the Maxwell Motor Corporation leased the Chalmers plant, he joined the Bethlehem organization. His endeavors were so succcessful that he was selected to carry on the work of the department.



Roy Davey, Sales Manager, Bethlehem Motors Corp., Allentown, Pa.

REMY CO. PUBLISHES TEXT BOOK.

A very valuable and useful book entitled, "Starting, Lighting, Ignition—Simplified," has just been published by the Remy Electrical Co., Detroit.

This book is said to be the first thorough explanation of automotive electrical equipment to be issued, in which the terms of electrical science have been reduced to the language of the average American. The various functions of a car's electrical equipment are described in such a simple and understandable way that no one can fail to grasp at one reading the full meaning of the work. Everyone who owns a power vehicle can profit by reading this book, which will be mailed free upon request to the Remy Electric Co., Detroit, Mich.

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GOODYEAR AIDS BOY SCOUT MOVEMENT.

The Goodyear Tire and Rubber Co. has for years been greatly interested in the Boy Scout movement and has encouraged it in the families of its workmen by appointing and supporting scout officers and by financing vacation trips for the scouts each year.

A unique record of the recent 2000-mile motor "hike" of 50 Akron, O., Boy Scouts through New York and New England has been made for the benefit of the movement all over the country. This is a three-reel moving picture film just completed by the Goodyear company, entitled, "Men in the Making." It follows out a scenario by Robert McLaughlin, the well known playwright, and the Boy Scouts while on this tour enacted many scenes for the camera man.

The trip this year was made in four big pneumatic tired trucks fitted out specially for the occasion. The itinerary included the beautiful and historical spots in the vicinity of Niagara Falls, Syracuse, Utica, Albany, Lake George, Lake Champlain, St. Johnsbury, the White Mountains, Portland, Me.; Boston, Worcester, Hartford, Binghamton, Ithaca, Lake Chatauqua and Erie, back to Akron.

But the film is not limited to scenic views and vacation jaunts. It includes numerous scenes illustrating many of the practical activities of scout work, such as rendering "first aid," following a trail, etc. So far as is known this is the first complete film ever made illustrating scout work.

The Goodyear company announces that this film is now available for use and will be loaned free to any scout organization in the country by applying to its offices at Akron, O.

LUBRICATION CHARTS FOR CLARK AXLES.

Every power vehicle manufacturer, every dealer, every repairer and every other person who has experience has sought to impress upon owners and drivers the necessity of thoroughly lubricating machines. Every engineer has given extremely careful attention to lubrication and has made whatever provision would appear to be essential to facilitating oiling and greasing. The best designed machine will fail and be deficient from every aspect unless adequately lubricated, yet with even reasonable care it will give service for years.

Claim is made that practically all failures and defects of operation after a truck has been used for a short time can be traced to neglect or ignorance of the driver. Much of this may not be willful neglect, but if due to lack of knowledge this is a shortcoming that could be corrected if the owner would see that the driver is fully informed.

The Clark Equipment Co., Buchanan, Mich., manufacturer of Clark internal gear driven axles, has undertaken to place in the hands of every owner or driver of a truck constructed with Clark axles a phantom drawing and oil lubrication chart that graphically illustrates the mechanism of the axle and directs the attention of the reader to the places for and the mileages between oilings. This drawing is large size and can be placed where it can be easily referred to. An illustration of the chart accompanying this drawing is shown. The Clark Equipment Co. will send to every user of Clark axles a chart and instruction sheet of care and lubrication if a request is addressed to the plant at Buchanan, Mich.

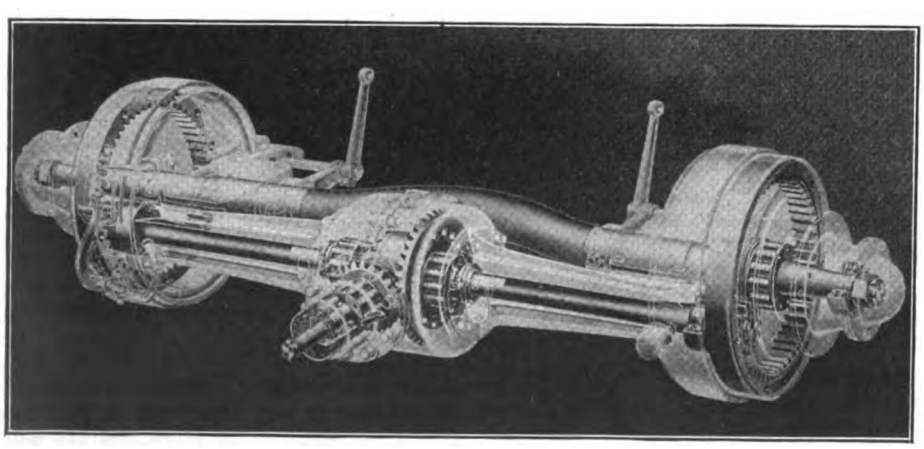


Chart of Clark Internal Gear Driven Axle, Showing Every Moving Part Requiring Lubrication, Supplied to Owners of Trucks Built with These Units.

RURAL MOTOR EXPRESS COMMITTEES.

The National Automobile Chamber of Commerce is taking up the possibilities of improving facilities for marketing farm products. President Charles Clifton of the chamber has appointed a strong committee of successful and forceful executives from the motor truck field to be known as the Rural Motor Express committee to handle this problem. The men selected by President Clifton are as follows:

Chairman, James L. Geddes, president, Kelly-Springfield Motor Truck Co., Springfield, O.; G. D. Wilcox, director of sales and advertising, Commerce Motor Car Co., Detroit; E. A. Williams, Jr., president and general manager, Garford Motor Truck Co., Lima, O.; O. H. Browning, truck sales manager, International Harvester Corporation, Chicago; A. T. Murray, president and general manager, Bethlehem Motors Corporation, Allentown, Pa.; F. W. Fenn, N. A. C. C., secretary.

NEW SOUTHERN AUTOMOTIVE TRADE ASSOCIATION.

The Louisiana-Mississippi Automotive Trade Association has been organized for the purpose of upbuilding in every possible way the automotive industry in the South. Its activities will include legislation, good roads, education of dealers, honesty in business and along many general lines. An information bureau will be established where data may be obtained concerning any phase of the industry in the South, and whence publicity will be sent to the leading publications in that section. The headquarters is at 712 Poydras street, New Orleans, La., and includes a large hall in which meetings of the local, sectional and the Louisiana-Mississippi associations are held.

DETROIT TRANSPORTATION OFFICERS.

At its annual meeting, held Sept. 5, the Detroit Transportation Association elected the following officers:

President, E. Foster Moreton; vice president, James Cahill; treasurer, Joseph Turner; secretary, F. L. Henk; directors, Joseph Maniero, A. F. Newman, Charles Nielson, Frank Holiday, Thomas O'Brien, Fred Baier.

The membership now consists of more than 100 companies operating over 600 trucks of all sizes.

SULLIVAN JOINS THOMPSON AGENCY.

George L. Sullivan, for three years advertising manager of the Fisk Rubber Co., Chicopee Falls, Mass., has resigned to become associated with the J. Walter Thompson Co., advertising agency, New York.

Mr. Sullivan's successor as advertising manager of the Fisk company will be Miss M. G. Webber, who for the past three years has had charge of the outdoor advertising of that concern.

FACTORIES URGE OVERLAND SHIPMENTS.

On account of the inability to obtain sufficient freight cars, Detroit truck and automobile manufacturers are urging their dealers to drive away their cars. Toledo and Cleveland plants are likewise encountering the same transportation difficulties, but the freight car shortage is not so acute there as at Detroit.

COMMERCIAL VEHICLES MUST CARRY MIRRORS.

The new law, requiring all taxicabs, motor trucks and commercial vehicles in Massachusetts to be equipped with mirrors, has gone into effect. It does not yet apply to passenger cars, but will be required on all vehicles in another year.

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FACTORY AND TRADE ACTIVITIES

NEW SALES MANAGERS FOR AMERICAN TRUCK.

The American Motor Truck Co., Newark, O., has appointed four new divisional sales managers, as follows: W. F. Lehman, formerly eastern representative of the Bethlehem Motors Corporation, and prior to that with the Maxwell Motor Co. and Saxon Motor Car Co.; Wright Gillies, formerly eastern manager for the Available Motor Truck Co., and prior to that with the Maxwell and Mitchell companies; M. A. Wiltenstein, formerly with the King Motor Corporation, wholesale manager of the Welling Motor Co. and factory representative for the Pan-American Motors Corporation; W. D. Paine, for two years in government service, prior to which he was eastern manager for the Saxon and Maxwell companies.

WELL KNOWN DEALERS HANDLE ACME TRUCKS.

The Acme Motor Truck Co., Cadillac, Mich., maker of Acme one, 1½, two, 3½ and five-ton worm drive motor trucks, is to be represented on the Pacific coast by the Douglas Boswell Co., whose main offices are at 1229 Seventh street, Sacramento, Cal., but its territory includes the entire state of California and Nevada as far east as Elko county.

The states of Maryland and Delaware, and the District of Columbia are to be represented by the Acme Motor Sales Co. of Baltimore, E. Comer Smith, president.

FULTON OPENS NEW ENGLAND BRANCH.

The Fulton Motor Truck Co. has decided to open a New England factory branch, instead of distributing through C. S. Ransom, Inc., as formerly. The branch will be in charge of A. H. McIntyre, who has been New England district manager, and Percy Ford, sales manager for C. S. Ransom. They have taken over the sales and service quarters of Mr. Ransom, 704 Beacon street, Boston, and will continue the business there.

WESTINGHOUSE REOPENS INDIANAPOLIS OFFICE.

On account of increasing business the automobile equipment department of the Westinghouse Electric and Manufacturing Co. has found it necessary to reopen its Indianapolis office, which was closed during the war. The location is 1003 City Trust building and Knox Easterling is in charge.

The Victor Manufacturing and Gasket Co., Chicago, has built a new plant, covering four acres of ground, which will more than treble its present capacity. The company also plans to erect an eight-story warehouse and storeroom, 100 by 300 feet, and will increase its capital to $1,000,000.

OSTERLOH HEADS GOODYEAR CALIFORNIA COMPANY.

The rubber industry and automobile tire world, particularly, will be interested in the announcement that A. F. Osterloh, secretary of the Goodyear Tire and Rubber Co. of Akron, O., is to go to Los Angeles, Cal., about Oct. 1 to become vice president and general manager of Goodyear Tire and Rubber Co. of California.

Mr. Osterloh, who is now one of the best known men in the rubber industry, has been intimately connected with the Goodyear Co. since the first four years of its organization. He started out as a salesman in the Chicago territory and was subsequently made branch manager and then manager of the Goodyear western sales division. He was then brought to Akron as assistant secretary of the



A. F. Osterloh, Vice President-General Manager, Goodyear Tire and Rubber Co. of California.

company and in 1915 became secretary. Although especially interested in salesmanship, since becoming an officer of the company he has given his attention to all the activities of Goodyear, and his ideas have been prominent in the formation of the policies that have been responsible for the wonderful success of the company. His selection for this very responsible position on the Pacific coast is a fitting recognition of his past achievements and follows as a natural development in the growth of the Goodyear Co.

The California company is capitalized at $20,000,000, will employ some 7000 workers at the start and will have a capacity of 7500 tires a day. There will be cotton mills operated by the Pacific Cotton Mills Co., a subsidiary concern, with 33,000 spindles, and a capacity of 75,000 pounds of cord fabric and 75,000 pounds of woven fabric each week. The ultimate plans contemplated for the California plant are an expansion to four times the original capacity.

NELSON CO. ANNOUNCES CHANGES IN MODELS.

The Nelson Motor Truck Co., Saginaw, Mich., is to increase the rating of its Jumbo Model D truck from 4000 to 5000 pounds. Several equipment improvements are also announced, including the installation of a new lubricating system, and the chassis price has been increased from $2500 to $2700.

The prices for the various models of Jumbo trucks are now listed as follows: Model D, 2½ tons, $2700; Model E, 2½ tons, $2775; Model C, five-ton tractor, $2800.

The Nelson Motor Truck Co. will also put on the market, shortly, two new Jumbo models, 1½ and 3½-ton sizes, each to be supplied in three wheelbase lengths.

GRIMES MADE DEVELOPMENT ENGINEER.

Charles P. Grimes has been made development engineer of the Root & Van Dervoort Engineering Co., Moline, Ill., and will be in charge of the dynamometer testing laboratory to be installed by that company. Mr. Grimes' previous experience, prior to government service, in which he was a member of the Signal Corps and assigned to the airplane engineering department at McCook Field, Dayton, O., included connections with the Wheeler-Schebler Carburetor Co., Indianapolis, and as assistant experimental engineer of the National Motor Car and Vehicle Corporation, Indianapolis.

VICKROY ELECTED ASSISTANT SECRETARY.

Guy Wilson, president of the Traffic Motor Truck Corporation, has announced the election of Torbert Vickroy as assistant secretary to the company. Mr. Vickroy has been in charge of the auditing and accounting department of the Traffic company for some time, and was formerly senior accountant for Ernst & Ernst, certified public accountants.

TRANSPORT CO. TO MOVE INTO NEW PLANT.

The Transport Motor Truck Co., Mount Pleasant, Mich., will move into its new $200,000 plant Oct. 1. The new building affords 52,000 square feet of floor space and ultimate plans call for 104,000 square feet, or double the present capacity. The company has just issued $250,000 new stock.

GOODYEAR PLANT WORKS 24 HOURS A DAY.

The big factory of the Goodyear Tire and Rubber Co., Akron, O., is running 24 hours a day in three shifts of eight hours each. Twenty-three thousand workers are employed.

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FARM TRACTOR TRADE AND INDUSTRY

EXACTING TESTS FOR TRAILERS IN ENGLAND.

The program for the coming tractor trials at South Carlton, near Lincoln. England, under the direction of the Society of Motor Manufacturers and Tractors, Ltd., has been issued.

The trials will include preliminary dynamometer and special tests carried out in different classes of soil, to be followed by the regular plowing, cultivating and threshing contests, and the haulage capacity of the various tractors will be demonstrated on a particularly difficult stretch of road near South Carlton. In fact, all the tests will be exacting and conducted under impartial observation.

The list of American tractors entered is as follows: Avery, Cleveland, Emerson-Brantingham, Fordson, Garner, International Harvester, Moline, Samson, Bull, Case, Gray, Wallis Cub and General Ordnance. There will also be a Ford tractor attachment unit. The only non-British entrant is the Fiat. The list closed with 59 entries and the International Harvester is the largest contestant, with seven machines.

TRACTOR SHOW IN GRAND CENTRAL PALACE.

Having made a series of trips to the tractor factories during the past several weeks, M. B. Mawby, manager of the International Farm Tractor and Implement Exchange, believes that the exposition scheduled for Oct. 15 will open most auspiciously with a thoroughly representative line of tractors and implements. This exposition is to be one of the eight permanent industrial exhibits of the Merchants and Manufacturing Exchange in Grand Central Palace, New York, each of which will occupy an entire floor—50,000 square feet area. Manufacturers and selling agencies of farm tractors, harvesting machinery, agricultural water works, silos and the like, will be represented.

IMPLEMENT AND VEHICLE MAKERS TO MEET.

The National Implement and Vehicle Association will hold its 26th annual convention at the Congress Hotel, Chicago, Oct. 15-17. The transformation of agricultural activities from horsepower to mechanical will be featured in the discussion and for the first time in the history of the association an attempt will be made to define the limits of free service.

AMERICAN TRACTORS IN ITALY.

Two American firms exhibited tractors and agricultural machinery at the recent sample fair held in Padua, Italy. Consul Armstrong, Venice, Italy, reports that tractors are being largely used now in the Padua district.

FEATURING FUEL TEST.

The feature of the tractor demonstration held at Centerville, Mich., Sept. 23-26, in connection with the St. Joseph county fair, will be comparison of fuel consumption in plowing and belt power tests.

The trials will be held under the supervision of H. H. Musselman, professor of farm mechanics at the Michigan Agricultural College and the St. Joseph County Farm Bureau. J. M. Wendt of Centerville, county farm agent, looking after the details. Twenty machines have already been entered.

The fuel consumption tests, which will occur the second day, will be conducted along somewhat novel lines. Each machine will be allotted a certain quantity of fuel as well as a certain sized tract of land for plowing. The plowing will continue until the fuel is exhausted, and the comparative sizes of the areas broken up will form the basis for the comparison.

"SELECTING YOUR TRACTOR."

"Selecting Your Tractor" is the title of a very attractive booklet published and now being distributed by the Cleveland Tractor Co., Cleveland, O., intended principally for farmer prospects. The print is in part given over to answering and showing how Cletrac tractors are adapted for the various needs of farmers for power machinery and a part is devoted to a presentation of facts concerning seed bed preparation and the discussion of power farm cultivation. The book is handsomely printed in two colors, contains numerous photographic illustrations and is bound with a striking four-color cover. It is an impressive development of sales literature.

TRACTOR SALES CONVENTION.

A farm tractor sales convention is to be held at Evansville, Ind., coincident with a big flying demonstration Oct. 14-18. It is expected that 100,000 farmers will be in attendance and admission will be free. There will be no set demonstrations or contests, but each exhibitor will show and handle his product as seems most advantageous to him. Roy Graham of Graham Brothers is in charge of arrangements.

WILL HANDLE FORDSON TRACTORS.

Walter N. Darby, who has represented the Herring Motor Co., Des Moines, Ia., has acquired the Tanner Motor Co., Cameron, Mo., and will act as representative of Fordson tractors and Ford cars in that vicinity.

TRACTORS AT DELAWARE SHOW.

A feature of the Delaware state fair this year at Wilmington, in addition to a large display of motor cars, trucks and tractors, was a tractor demonstration continuing several days.

AMERICAN TRACTORS IN FRENCH TRIALS.

American, French, English and Italian tractors will be represented at the French trials to be held near the town of Senlis, Sept. 29-Oct. 5.

All machines must perform one of the following minimum tasks during the first three days, under penalty of elimination from the final tests, the competitor making his own selection:

First, plowing 478 square yards a horsepower to a depth of 10 inches minimum; second, plowing 598 square yards a horsepower to a depth of 8.6 inches; third, plowing 837 square yards a horsepower to a depth of seven inches; fourth, plowing 1794 square yards a horsepower to a depth of 3.1 inches. No account will be taken of gas and oil consumption and a certificate will be given to each competitor.

The American entrants are as follows: Wallis, Moline, Globe, Pidwell, Parrett, Fordson, Gray, Rip, Case, Sandusky, John Deere, Avery, Happy Farmer, Bull, Cleveland, Nelson, Beeman, Mogul.

The French tractors have a numerical superiority for the first time this year, there being 33 entrants, while England and Italy are to be represented by only one each, being the Austin and Fiat respectively, and all other nations are represented by one entrant, the Praga.

TRACTOR SHOWS SCHEDULED.

The following tractor shows are scheduled to be held the present fall and winter:

Oct. 6-19—Dallas, Tex., Texas state fair; Oct. 14-16, Ottawa, Ont., Can., interprovincial plowing match and tractor demonstration; Oct. 15, Ellensburg, Wash., tractor demonstration in charge of W. L. Davis, county agricultural agent; Oct. 15-18, Charleston, W. Va., tractor demonstration, Kanawha county fair; Oct. 20-25, Raleigh, N. C., fair; Oct. 22-27, Shreveport, La., fair; Nov. 22-29, Jacksonville, Fla., Florida state fair and exposition, B. K. Hanafourde, manager; February, Kansas City, Mo., fifth annual Kansas City Tractor Club, Guy H. Hall, manager; Feb. 9-14, Wichita, Kan., Tractor and Farm Machinery Forum, Wichita Thresher-Tractor Club.

REID-HART-PARR TRACTION CO.

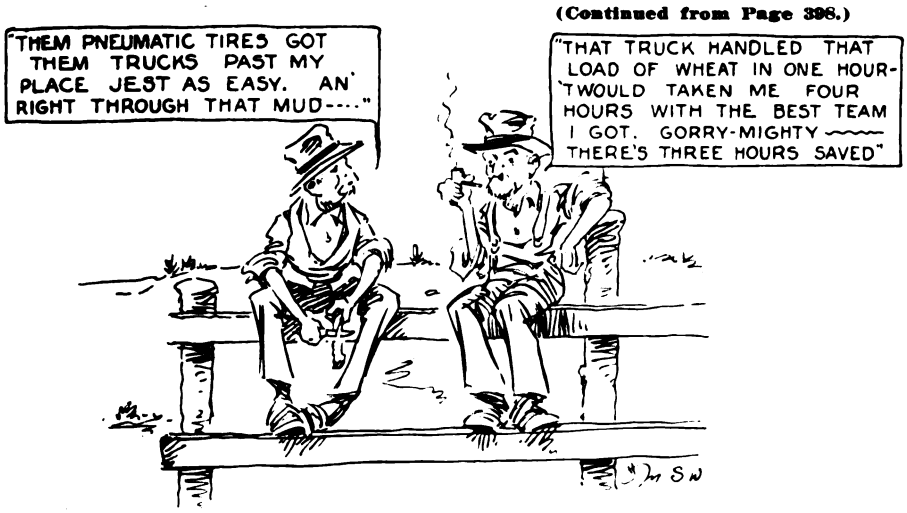
The Reid-Hart-Parr Traction Co. has been formed at Charlotte, N. C., for the distribution of Hart-Parr tractors in North and South Carolina. The manager is H. E. Reid, formerly president and manager of the Reid Hardware Co. of Lincolnton, and the secretary and treasurer is Zeb M. Johnson of Pineville.

COURTNEY TRACTOR CO.

The Courtney Tractor Co. has been incorporated at York, S. C., with $10,000 capital.

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(Continued from Page 398.)



AFTER THE TOUR HAD PASSED THEIR TOWN

A big tent had been erected here for the accomodation of the Jackies and other tourists, while the remainder were taken care of at Hotel Klein. The committee of arrangements was headed by E. T. Lierboe, town clerk and banker.

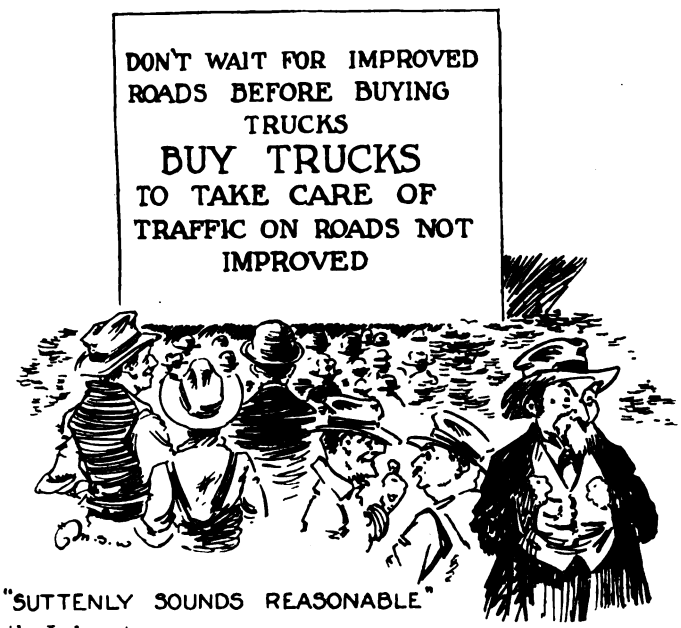
Mr. Kroh wishes to go on record that the tourists had a most delicious chicken dinner here at one of the local restaurants.

Turtle Lake to Minot.

Minot, N. D., Sept. 1.—This was Labor Day and it was celebrated in appropriate fashion by the personnel of the tour. Before 10 o'clock, when a band concert was scheduled in Minot, the trucks were busy demonstrating their usefulness and versatility. The Gramm-Bernstein hauled a load of loose grain, 3010 pounds, 6.8 miles to the elevator; the Signal a load of the same, 2930 pounds, 21½ miles; the Republic, 5200 pounds, 21½ miles; the Clydesdale, 28 bushels of wheat, 21½ miles; Diamond T, 4000 pounds loose grain, 21½ miles; Hawkeye, a big load of wheat; the Atlas, a load of wool, eggs and cream, 22 miles round trip, weight 1000 pounds; the Service, a load of loose hay from farm 7½ miles distant; Winther, 2½ tons gravel from pit three miles distant; Maxwell, 33 cans of milk from a milk depot to railroad station, two miles.

The Hawkeye pulled in, just in time for the band concert, with a load of wheat from the farm of Jacob Miller, Mercer, N. D., and Mr. Miller was so much impressed that he mounted the truck and made a speech in praise of the truck's utility. Mr. Miller stated that it would have taken a team of horses four hours to do what was done with the truck in one hour. Turtle Lake has only 500 inhabitants, but it showed more enthusiasm than many cities of much larger size.

The caravan left Turtle Lake at noon and reached this place at 4:20, a short stop being made en route at Velva. At 6 o'clock the entire party, including the Naval Band, had an excellent dinner, served in the basement of the Presbyterian church at the expense of the local committee and the Chamber of Commerce. Mr. Pierce of the Pence Auto Co. acted as toastmaster and E. A. Long of the Bruch-Williams Co., who is also president of the Rotary club, made the address of welcome. The other speakers were Major Lubeck of the United States Transport Corps, Mr. Hallowell of the Atterbury Truck Co., Tourmaster Spencer, Mr. Luckett of the Master Co. and Mr. Kroh, official lecturer. The county commissioners and a considerable number of other county and city officials also attended the banquet and the spirit of hospitality there manifested prevailed throughout the stay here at Minot, the western terminus of the National Motor Truck Development tour.



"SUTTENLY SOUNDS REASONABLE"

The tour will be concluded at Milwaukee, where the last show of the tour will take place Oct. 4 and there the caravan will disband. Some of the machines will be used in other truck demonstrations during the remainder of the autumn.



INTERESTED IN TRUCKS—? WE'LL SAY SO!

COMMISSION MERCHANTS USE TRUCKS.

The commission merchants of Montgomery City, Mo., have made arrangements, if strikes interfere with express and freight traffic, to have their goods hauled in motor trucks from St. Louis. The plan is to have the loaded trucks from St. Louis meet the trucks from Montgomery City half way, so that each trip can be made in 10 hours even with heavy loads. These trucks will supply towns between St. Louis and Montgomery City with emergency goods.

NEW TRUCK LINE IN MICHIGAN.

The Upper Peninsular Motor Truck Co., Menominee, Mich., is to operate a line of trucks between Escanaba and Menominee. Two machines will operate each way daily.

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FACTS ABOUT THE TRUCK FACTORIES

FACTORY FOR DETROIT RADIATOR

The Detroit Radiator Corporation, manufacturer of the Curran self-adjusting radiator for general automotive use, has issued stock to the amount of $100,000, to provide funds for the erection of a new factory. A four-acre site has been secured in Royal Oak, near Detroit.

The corporation is capitalized at $300,000 and its officers are as follows: President, Dr. Edward T. Curran; general manager, Harry H. Rowe, formerly with the Burroughs Adding Machine Co.; treasurer, John Kelley, United States Pattern and Manufacturing Co.; secretary, Thomas W. Booth, also formerly of the Burroughs company.

Among the superior features claimed for the Curran radiator are self-adjusting tank, regulation of temperature, air drawn in at 33 per cent. deflection, striking fins with extra force, giving greater cooling; fewer joints, likelihood of damage from freezing reduced and durable, rigid construction.

TROY DROP FRAME TRAILER.

The latest addition to the products of the Troy Wagon Works Co., Troy O., is a drop frame trailer especially designed for the collection of ashes, garbage, etc., and for contracting work. The drop frame construction brings the loading height within easy reach of the shoveler, and the automatic side dump body with which this model is equipped, discharges the load on the outside of the wheels. The wheelbase, 115 inches, makes possible a short turning radius, allowing operation of the trailer in alleys and narrow roadways. It is claimed that this method of gathering garbage, ashes and handling all kinds of loose material has reduced the cost more than one-half what it was by the old system.

TRUCK SHOW COMMITTEE.

Charles Clifton, president of the National Automobile Chamber of Commerce, has appointed the following truck show committee to handle the matter of commercial vehicle exhibits for the coming national show:

Chairman, M. L. Pulcher, Federal Motor Truck Co.; David S. Ludlum, Autocar Co.; A. J. Whipple, Diamond T Motor Car Co.

NASH DIVIDEND DECLARED.

A dividend of $6 a share, payable Aug. 1, to holders of record on the common stock of the Nash Motors Co., has been announced. A dividend of $10 on the common stock was declared six months ago.

The Atwater Kent Manufacturing Works, Philadelphia, has changed its name to Atwater Kent Manufacturing Co.

WATSON TRUCKS SOON TO ENTER FIELD.

The Watson Products Corporation, Canastota, N. Y., will, within the next few months, put in the market a new series of motor trucks, tractors and trailers. While no definite information has as yet been given out in regard to the exact specifications, it is understood that the engineering plans perfected call for three-quarter ton, 1½-ton, 2½-ton and 3½-ton trucks.

The Watson Products Corporation is the new name of the old Watson Wagon Co., which for the last 31 years has engaged in the manufacture of heavy wagons for use in the contractor and municipal field, and its business has increased from a capitalization of $40,000 at the time of incorporation in 1899 to $400,000 in 1914. On July 1 this year the capital was materially increased and the name changed to Watson Products Corporation and a number of other concerns in that part of the state were acquired, thereby increasing the already large factory facilities, preparatory to manufacturing motor trucks.

About five years ago the engineering department of the Watson company was enlarged and a series of road tractors and motor truck trailers was added, and quite an extensive business was developed all over the country, but on the outbreak of the war the government called on the plant for the production of a large number of pontoon wagons, tool wagons and big gun carriages, as well as other equipment, and this made necessary the postponement of further extension of production.

It is understood that the company is increasing its sales force and making plans for the allotment of territory to dealers for marketing its new product.

NEW EXPORT MANAGER FOR REPUBLIC.

The Republic Motor Truck Co., Inc., Alma, Mich., has appointed Vernon E. Bush manager of its export sales division. Mr. Bush has been for over 10 years in the automotive field, as assistant general sales manager of the Advance-Rumely Co., LaPorte, Ind., and sales promotion manager of the foreign department of the White Motor Co.

COVERT GEAR COMPANY'S NEW MANAGER.

Alwin A. Gloetzner, formerly vice president of the Covert Gear Co., Inc., Lockport, N. Y., in charge of sales and engineering, has been chosen president and general manager of that company, succeeding P. A. Clum.

James R. Hayes, recently released from government service, has become assistant advertising manager for the Powrlok Co., Cleveland.

ADDITION FOR FIELD MANUFACTURING CO.

The Field Manufacturing Co., Owosso, Mich., maker of commercial truck bodies, is building an addition to its plant, to be equipped with new automatic machinery, which will greatly increase the output. Plans are being made for the making of at least 100,000 units during the season of 1920, and distributing centers are to be established in all the principal cities. The augmented organization of the company is as follows:

President, J. F. Field; general manager, E. J. Frederick; office and traffic manager, F. H. Basom; general superintendent, A. L. Moyses; chief engineer, C. C. Thomas; general sales manager, A. L. Ditter; sales manager, F. J. Bosma; traffic manager, T. E. Latimer.

NEW DEPARTURE'S MERIDEN PLANT.

The New Departure Manufacturing Co., Bristol, Conn., will start in with a force of 1000 men at its new plant in Meriden, Conn., and it is expected this will be ultimately increased to 3000. The New Departure company is also building additions to its main plant at Bristol to cost $1,500,000 and plans are perfected for the erection of two more large buildings in the near future and for doubling the capacity of the ball bearing and forging plants.

FINE FACTORY FOR TRAILMOBILE.

The new factory of the Trailmobile company in Cincinnati is rapidly nearing completion and will be one of the finest in the industry devoted exclusively to the manufacture of trailers. The first unit will occupy space 200 by 500 feet.

The recent displays of the company's trailers at the California, Texas and Ohio state fairs, and the Cincinnati automobile show, attracted favorable attention.

TRUCK LINE NEW YORK TO BOSTON.

The New York and New England Freight and Storage Co. has been formed by F. L. Z. Caracristi to do long distance hauling between New York and Boston. Mr. Caracristi was formerly identified with the Ford Motor Co.

U. S. RUBBER INCREASES CAPITAL.

The stockholders of the United States Rubber Co., New Brunswick, N. J., have ratified an increase in capitalization from $70,000,000 to $100,000,000 first preferred and from $40,000,000 to $200,000,000 common stock.

The Moak Machine and Tool Co., Port Huron, Mich., is building a new foundry unit and will make iron castings exclusively.

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MOTOR CAR MAY DISPLACE SHORT RAILROADS.

C. A. Morse, assistant director of operation of the United States Railway Administration, one of the best known railroad men in America, is of the opinion that the motor car may entirely displace the short rail lines of the country. "The perfection of the motor car," says Mr. Morse, "together with the universal use of the automobile, has introduced a new element into the transportation problem that should be taken into consideration at this time, while studying the reorganization of the whole transportation system.

"Where, heretofore, the development of the country for 50 miles on either side of a trunk line has required the construction of light branch lines, it is a question to be seriously considered whether this policy should be continued or whether the products of the farm should not be handled by motor car to the main lines."

WORLD MARKET FOR AMERICAN CARS.

Commerce reports and communications from abroad constantly call attention to the crying need of motor cars in practically every quarter of the globe. China, India, South America, Switzerland, Australia, Nigeria, Mexico and nearly all the countries of Europe have been specifically mentioned in recent consular advices.

The lack of good roads is the main obstacle to the more extensive use of cars abroad, but road improvement is being agitated everywhere that motor transport is so sorely needed.

When it is considered that other automobile producing countries cannot meet the demand in their home markets for five years to come, it is evident that American manufacturers have a wonderful opportunity for foreign business at the present time.

MOTOR TRUCKS IN GRAIN FIELDS.

At the farm of Frank Gilbert at Iowa Falls, Ia., four motor trucks, a part of the National Motor Truck Development Train, which is covering a 3000-mile tour through six of the western states in an endeavor to educate the farmer, cleared a 35-acre patch of oats and wheat in three hours. The motor trucks displaced about 10 horse teams and 15 men and hauled the grain sheaf 1½ miles from the field of the thresher and hauled the grain to the unloading point. It would have taken 12 hours to have cleared the field with 10 horse teams.

HOUSE PASSES CAR THEFT BILL.

A bill, known as the National Motor Theft Act, introduced by Congressman Dyer of Missouri, has been passed by the National House of Representatives and sent up to the Senate. This bill has the support of the National Automobile Dealers' Association, and has for its object the prosecution of automobile thieves.

Trucks on Pneumatic Tires Since 1911 On Long Tours

Two antiquated Reliance trucks, equipped with the first pneumatic truck tires ever made, are being used by the United States Tire Co. in a publicity campaign just inaugurated to promote the use of pneumatic truck tires.

This company began experimenting with big pneumatic tires for trucks in 1910, and in 1911 the first tires were made. Three Reliance trucks, which were then a part of the fleet at the company's Detroit factory, were equipped with the tires. A short time ago the company discovered that these pioneer trucks were still in existence and doing full service at the plant of the Canadian Consolidated Rubber Co., Kitchener, Ont.

One of these trucks left Detroit Aug. 25 on a 5000-mile tour of the Middle West, and the second was started from Detroit a few days later for a trip of many thousand miles through the East. The purpose of the tours is two-fold, first, to emphasize the United States Tire Co.'s priority in the field of pneumatic tire manufacture, and second, to give visible proof to truck owners that pneumatic truck tires prolong truck life.

A staff of experts aboard each truck will carry on an educational campaign, and a modern truck equipped with pneumatics will accompany each of the old trucks, and demonstrations will be given of approved methods of mounting, demounting and inflating the big tires.

It is cited by the company that every truck owner knows that a truck which has given steady service since 1911 has something remarkable about it, and the inference is that the life of these three Reliance trucks was prolonged by the fact that they are equipped with pneumatic tires. "In addition to prolonging truck life," it is claimed, "the big pneumatics save jar and vibration, cut repair bills and prevent breakage of cargo. They save easily one-third on gasoline and oil and greatly increase the operating radius. To the farmer not the least interesting feature is that trucks on pneumatics are not hard on roads."

NOVEL TRUCK DRIVE AWAY.

Something novel in the way of a truck drive away was accomplished recently by a party of 12 GMC dealers from Hooper, Neb.

While truck drive aways are by no means unusual with GMC dealers, one driver having often handled two trucks by mounting one of the smaller units upon a larger, in this instance the trucks were of the same capacity, making it impossible to load one on another. The following novel plan was originated to meet the situation:

The front wheels were removed from three of the trucks and the front axle placed on wooden stringers at the rear of another model of the same type and weight. The rear wheels of one model rested on the ground and the front was fastened to the rear axle of the other truck with a swivel, so that it could turn. This virtually made a two-wheel trailer out of the rear truck.

The long journey from the GMC factory at Pontiac, Mich., to Hooper, Neb., was made in six days, actual running time, without a mishap to any of the outfit.

WARRINGTON IN THE WEST.

F. W. Warrington, assistant sales manager of the Denby Motor Truck Co., Detroit, is on an extended trip through the West to study general business conditions in that section. His itinerary includes Minneapolis, Sioux City, Omaha, Kansas City, Denver, Portland, Seattle, San Francisco, Los Angeles, Dallas, Tulsa and St. Louis.



One of Three Reliance Trucks, Equipped in 1911 with First Pneumatic Tires, Made by United States Tire Co.—Two of These Trucks Are Now Touring the Country.

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INTERNATIONAL TRADE CONFERENCE

By the invitation of the Chamber of Commerce of the United States the International Trade Conference will be held at Atlantic City, Sept. 30 to Oct. 3.

The committee has been diligently at work, both in the United States and Europe, to arrange a program consisting mainly of topics in which all the countries of the conference would have a common interest. Under the heading of major topics is scheduled the economic readjustment of commercial and industrial conditions in England, France, Italy and Belgium, it being deemed essential that a frank statement be made as to what is needed to place these countries on a basis of stable and enlarged production, and should be of a character as to serve as a guide to American business men, manufacturers, producers, bankers, etc., in planning their trade relations in the future.

Finance will be another general subject, including foreign exchange and all the forms in which questions of credit may arise.

Inasmuch as it is recognized that wars have been due to trade rivalry, a general consideration of unfair competition in foreign trade might be salutary to see how far the principles of fairness which have been applied in legislative and administrative regulation to domestic trade, might be applied to international trade.

The world's food supply will remain an international problem until the effects of war conditions may have become less acute, and questions of food and of the cost of living will have a prominent place on the program. It is hoped that Herbert Hoover may lead the discussion of these topics.

There will be an American committee for every subject, which will meet with the foreign delegates, who will thus have opportunity to state the needs of their particular countries to the appropriate committee. Following an examination of the questions in detail, the conclusions reached will be reported to the conference as a whole. In this way the members of every delegation will have an exceptional opportunity to present in the most effective way their views and the information they bring in.

The personnel of the foreign delegation is as follows: British delegation—Chairman of delegation, Sir Arthur Shirley Benn, member of Parliament, formerly British vice consul at Mobile, Ala., managing director Hunter, Benn & Co., for several years member of the London common council; Marshall Stevens, member of Parliament, one of the founders and manager of the Manchester ship canal; Frank Moore, Moore, Eady & Murcott Goode, Ltd., Leicester; Bailie John King, chairman National Light Castings Association, Glasgow; J. G. Jenkins, former premier of South Australia, but born in Pennsylvania, formerly minister of education, minister of works and member of Parliament; Barton Kent, G. B. Kent & Sons, Ltd., secretary of the delegation.

French delegation—President, Paul Schneider, president of the Creusot Works; vice president, Baron du Marais, vice president and director of the Credit Lyonnais, representing the banking interests; Alexander Louis Albert Tirman, councillor of state, who represented France at the San Francisco Exposition; M. Waddington, Waddington Sons & Co., representing the textile industry; M. Homberg, formerly director of the Societe Generale; M. Roche, president of a syndicate representing the chemical industry; Julian Potin, president of the Potin Cie, wholesale grocers, representing the food interests; M. Dolleans, representing the press; Pellerin de la Touche, president of Compagnie Generale Transatlantique, a French shipping line; M. Prevet, president of the union of wholesale food syndicates, and president of a large packing and canning company; Jean Clementel, representing the minister of finance; M. Mazot, secretary general; M. Boyer, assistant secretary general; M. Pousset, secretary, representing the steel industry; M. Peson and M. Dion, secretaries.

Italian delegation—Chairman, Giuglielimo Marconi, father of the wireless telegraph and member of the Italian Senate; Silvie Crespi, who was minister acting as food controller in the Italian war cabinet; Pio Perrone, G. Ansaldo & Co., shipyards and metal manufacturer; G. Quartieri, manufacturer of chemical products; Salvatore Tagliavia, mayor of Palermo; Marco Cassini, president of the union of chambers of commerce of the kingdom.

Belgian delegation—Chief of mission, M. Van de Vyvere, minister of state, finance minister during the war; Louis Canon-Legrande, president of the permanent committee of the internationai congress of chambers of commerce, president of the federation of the commercial and industrial association of Belgium and president of the chamber of commerce of Mons; Alber Neve, engineer and manufacturer; M. Van de Ven, president of Louvain university; M. Janasen, director of the Belgium National Bank; M. de Groote, vice president of the Antwerp chamber of commerce; M. Maere, secretary.

SERVICE CO. TO GIVE AWAY AIRPLANE.

The Service Motor Truck Co., Wabash, Ind., has offered an unusual prize to the distributor, dealer or Service representative whose percentage of business done during the last six months of the year most nearly reaches the quota assigned by the company. This is a Canadian Curtiss J. N.-4 type airplane, the same as the 10 planes that the company is using in the distribution of parts. A complete course of instruction in flying at the Service aviation field is included.

The quotas have been arranged, having in mind the size of each representative's territory, and other conditions, so that all dealers, large and small, are on an equal footing in the contest.

The increasing demand for the products of the Sewell Wheel Co. has necessitated the opening of eight new branches, as follows: Dallas, Tex.; Memphis, Tenn.; Omaha, Neb.; Salt Lake City, Los Angeles, Cal.; San Francisco, Portland, Ore.; Indianapolis. This makes makes a total of 37 branches maintained by the Sewell Co.

MAGNETO MANUFACTURERS ISSUE BOOKLET.

Magneto Manufacturers, 110 West 40th street, New York, N. Y., has just issued an attractive, well illustrated booklet entitled, "Why Magneto Ignition Makes a Good Engine Better," presenting in a convincing manner the points in favor of magneto ignition.

Emphasis is given to the claims that the magneto is always dependable, that magneto sparks give more power and that magneto ignition means more miles a gallon, makes winter starting easy and efficient driving easy.

Magneto Manufacturers makes the Bosch, Berling, Eisemann, Simms, Aero and Dixie magnetos, the last two being the product of the Splitdorf Electric Co., Newark, N. J.

NEW AUTO SERVICE COMPANY.

Walter H. Shutt, who has been closely identified with the H. J. Koehler Motors Corporation of Newark, N. J., for a number of years, has severed his connection with that concern and, with Charles R. Hulley and others, has incorporated the Advance Auto Service Co., with offices and shops at 20 Orange street, Newark, N. J.

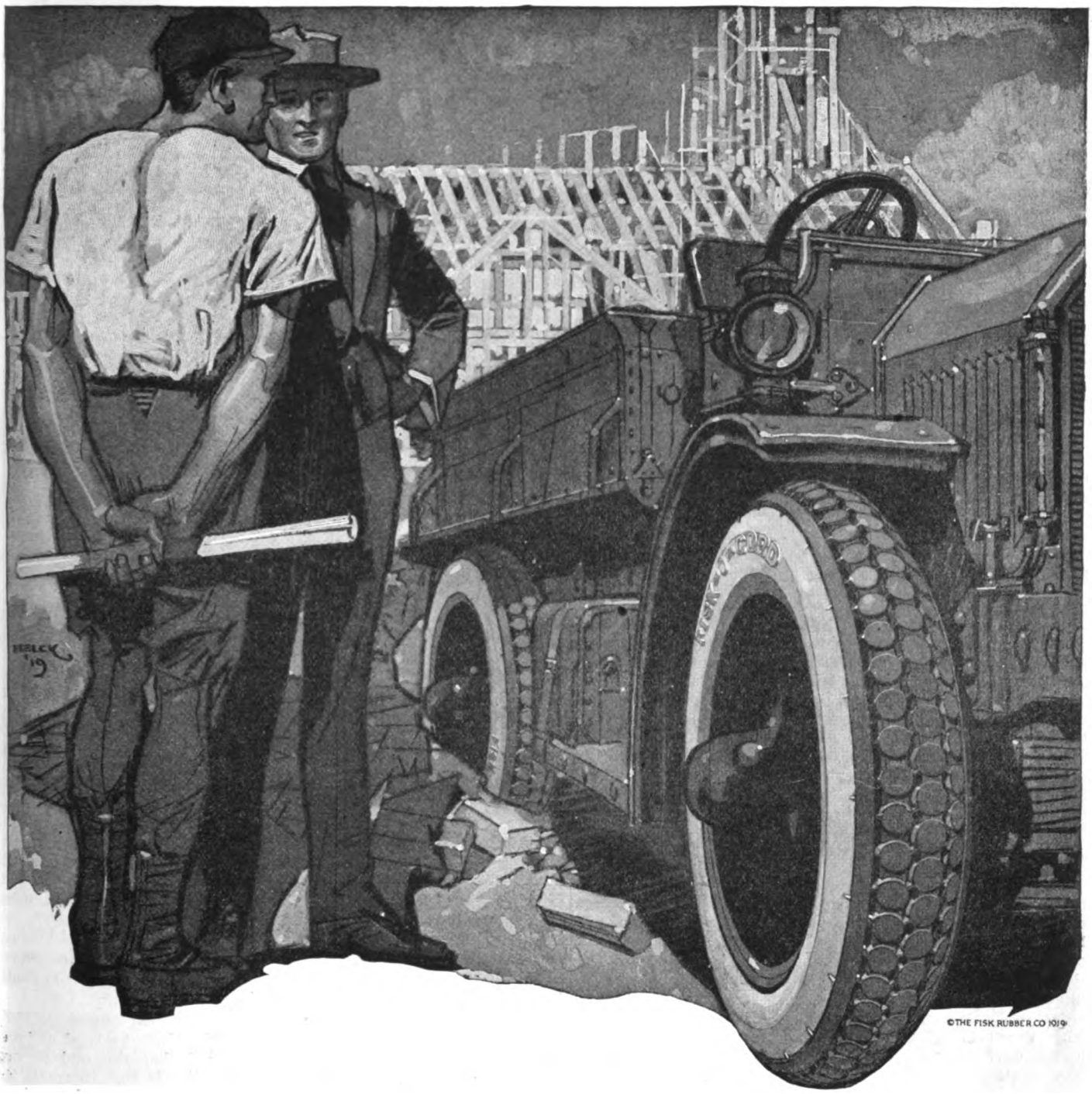
The Advance Auto Service Co. will conduct engineering and special service departments in addition to rendering high class repair, reconstruction and manufacturing service.

BUSHING MANUFACTURERS TO CONFER.

The Motor and Accessories Manufacturers' Association has called a conference of bushing manufacturers to be held at the Manufacturers' club, Philadelphia, Sept. 30, for the discussion of the standardization of bushings. All manufacturers of bushings have been invited to send representatives.

The Motor Truck Association of America, Inc., New York, is to hold a ladies' night Sept. 25 at the headquarters of the Automobile Club of America, 247 West 54th street, the feature of which will be an illustrated lecture by Lieutenant-Colonel Ernest K. Coulter, Q. M. C., U. S. A., on "The Activities of the Quartermasters' Corps During the War."

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WHO CAN KEEP COUNT of the fleets of motor trucks of 1920—springing into existence to meet the exigencies of post Armistice production? *Good Tires* save cargoes and deliver them on time—save trucks and gasoline at the same time.



PUT FISK CORD TIRES upon your truck with this assurance:—

FOR NEARLY a quarter of a century the makers have specialized upon pneumatic tires and have made nothing else.

BEHIND THE material and the workmen is *the policy of The Fisk Rubber Company:*—to be known as "the best concern in the World to work for and the squarest concern in existence to do business with."

A CONCERN with this ideal cannot make anything but the *best*—truck tires, automobile tires, bicycle tires.

FISK TRUCK TIRES

(When Writing to Advertisers, Please Mention MOTOR TRUCK.)

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FEDERAL AND STATE ROAD BUILDING

SEPARATE FREIGHT AND PASSENGER HIGHWAYS.

Separate roads for passenger and freight traffic in congested sections of the country are probabilities of the comparatively near future, is the opinion of George C. Diehl, chairman of the A. A. A. Good Roads Board, who has sent a communication to that effect to the War Department.

"There will never be a time when all roads are of equal durability and carrying capacity," comments Mr. Diehl. "There must come a classification of highways. Over class one the heaviest motor trucks and trailers would be permitted; and owners and operators of trucks should be prosecuted for using the heaviest trucks on roads designed for lighter traffic. Wider and parallel roads would be found to be the most economical method of laying out the highways system."

MISSISSIPPI INTERESTED IN GOOD ROADS.

The good roads propaganda in Mississippi is still bearing fruit. This month the voters of Warren county are to pass upon a bond issue of $500,000 to be used in the construction of new highways, and Hinds county is placing bonds for $125,000, in addition to about $500,000 already subscribed for the same purpose.

ARMY AID SUGGESTED FOR ROADS.

Representative Halings has introduced a bill in the National House creating a Public Service Corps, under army supervision, the functions of which would be to construct public works, particularly public highways. The bill calls for the organization of a force of not less than 175,000 chosen annually, fully equipped for infantry service in the field and provided with animals, vehicles, tools, machines and materials prescribed by the Secretary of War, requisite for the improvement and construction of roads, levees, bridges or other public works. An estimated sum of $200,000,000 would be required to put the act into effect. It was referred to the committee on military affairs.

FEDERAL HIGHWAYS NOW WANT A BILLION.

A billion dollars is the sum now mentioned in a matter-of-fact way in connection with the building of a Federal highways system. Dr. S. M. Johnson's repeated reference to this sum at the various stops made in the transcontinental tour of the United States Army Transport Corps, has invariably invoked the most enthusiastic approval, particularly in the Far West, where the need of highways is vital and essential to early development.

FEDERAL AID FOR ROAD WORK.

The United States Bureau of Public Roads approved Federal aid statements from the various states for the construction of 1426.84 miles of road in June, estimated to cost $25,611,314.99, with the Federal aid allowance of $11,725,500.61. These June statements bring the total amount of Federal aid applied for to date up to $54,654,984.44.

Illinois comes forward with two projects, one for 86 miles to cost $2,321,650 and another for 150 miles to cost $4,463,511.60, beating all previous records. The first work involves the construction of the East St. Louis-Springfield highway and is an important link in the state highway system. The second project contemplates the completion of the Old National road, extending from the Potomac river to the Mississippi.

$400,000,000 ROAD BILL.

Senator Sheppard has introduced in Congress a bill to appropriate $400,000,000, at the rate of $100,000,000 a year for the next four years, as additional appropriations for the purpose of carrying out the Federal Road Aid act of 1917.

The bill also provides that where sparsely settled districts find it difficult to meet the Federal aid funds with an equal amount, the Secretary of Agriculture shall have power to pay more than 50 per cent. of the cost of the projects.

NEW LAW AFFECTS SPOTLIGHTS.

The new law, now in effect, regarding the use of mirrors on trucks, also includes a section on the use of spotlights, in which truck drivers are warned to be careful in the use of the spotlight. Section 2 of the act provides that "spotlights, except for the purpose of reading signs and those used as an auxiliary when the other lights on the car required by law fail to operate, shall not be used. If a spotlight is dimmed, however, to comply with the headlight law, that is, so that its rays do not shine more than two feet above the ground at a distance of 30 feet from the vehicle, it may be used as a headlight, and in such case, there is no breach of the law."

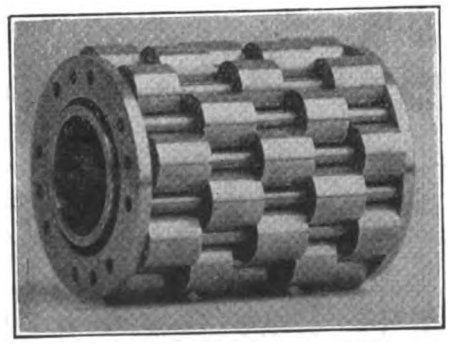
For the violation of this section a fine of not less than $20 nor more than $100 will be imposed.

PROMOTION FOR KELLY.

John Kelly, who has been for 9½ years New York district manager of the Edison Storage Battery Co., has been appointed general sales agent of that company, with headquarters at Orange, N. J. This promotion follows his appointment on July 1 as assistant general sales manager. Mr. Kelly was formerly with the Westinghouse Storage Battery Co., Firestone Tire and Rubber Co. and the Swinehart Tire and Rubber Co.

HART ROLLER BEARING A NEW DESIGN.

A new design or type is reflected in the bearings produced by the Hart Roller Bearing Co., Orange, N. J., which is claimed by the manufacturer to have distinct value. Instead of the usual rollers extending the length of the bearing, series of short rolls are assembled on shafts, so that two lengths of rolls may be used. The arrangement of the rolls is shown in the accompanying illustration,



The New Hart Bearing with Staggered and Meshed Rolls.

they being staggered and meshed so that the bearing is the entire length of the shaft and the race.

As will be noted, the series of rolls are placed on alignment shafts that are mounted at the ends to revolve free on retainer rings, which serve as separators and maintain the relation of the rolls and shafts to each other. Claim is made that the design reduces the bearing angle, that is, the angle included between radial lines drawn from the axis of bearing through the centers of the adjacent rollers, so that the bearing stresses are substantially lessened.

That the bearing will afford satisfactory results either in a vertical or horizontal plane, and that the end of any lightly loaded roller is free to rotate independently of the heavily loaded end, so that there will not be undue wear from eccentric loading, are two claims for the design. The movement of lubricant through the bearing is maintained to be extremely free. The bearings are constructed from a special chrome-vanadium steel and heat treated.

FOREIGN DELEGATES TO TOUR AMERICA.

Following the meeting of the International Trade Conference, to be held at Atlantic City, Sept. 30, the foreign delegation will make a tour of the principal cities east of the Mississippi river, and this will afford further opportunity for acquaintance and discussion between the business men of this country and those of other countries. The arrangements for this tour are in charge of Delos W. Cooke and will include a month's travel.

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The Contented Driver



EASY steering makes Contented Drivers. It conserves human strength and increases efficiency in both driver and truck. It means a bigger day's work more easily done and greater satisfaction to both the owner of the truck and the man who drives it.

This Contented Driver is only one of 140,000 who go to their homes after a better day's work with lighter hearts and with less wearied bodies, because the trucks they drive are equipped with

ROSS STEERING GEARS

The special feature which distinguishes Ross Gears from all others is the screw and nut mechanism which transfers the action of the steering wheel to the steering arm. The nut is a solid piece, completely enveloping the screw, so that the enormous bearing surface on the threads of both screw and nut is utilized with every turn of the wheel.

These bearing surfaces not only make steering easy under all conditions, but they guarantee an unusual degree of safety and reliability.

Ross Steering Gears are now used as standard equipment by 120 different manufacturers, representing considerably over half the entire motor truck industry.

Write for catalog and any other information desired about "The Steering Gears that Predominate on Motor Trucks."

ROSS GEAR & TOOL COMPANY, 790 Heath St., Lafayette, Ind.

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PROBLEMS OF THE TRUCK INDUSTRY

TAX CONFERENCE HELD.

At a conference held in Washington between tax officials and representatives of the National Automobile Chamber of Commerce and the Motor and Accessory Manufacturers' Association, the following subjects were considered:

The definition of the terms "automobile trucks, automobile wagons and other automobiles" for the purpose of taxation; the definition of the words "parts and accessories;" the determination, if possible, of some system whereby parts of parts and accessories may be taxed without the necessity of multiple certificates in the case of successive sales thereof; determination of what does or does not constitute "further manufacture" within the meaning of the law; determination of the effect "general use as a commercial commodity" should have on the status of an article as far as its taxability as a part or accessory is concerned; the establishment of some method whereby jobbers and dealers may account for taxable articles purchased by them from the manufacturer thereof, and subsequently diverted to use on or in connection with an article not taxable under section 900, subdivision 1, 2 or 3; simplification of the regulations affecting export sales, both as to the time within which proof of exportation must be furnished, and as to the character of the proof of exportation required.

STEEL STRIKE WOULD CLOSE DETROIT FACTORIES.

A canvass of automotive industries in Detroit reveals the fact that not a single company in that district has sufficient steel on hand to last over 60 days, the greater number of the concerns having less than 30 days' supply on hand. It will thus be seen that if the impending general steel strike should be declared, 90 per cent. of the Detroit automotive industries will be brought to a complete standstill should the strike last for a period of more than 30 days.

On account of poor transportation facilities and other causes, the Detroit manufacturers have less steel on hand today than they are accustomed to carry in ordinary times.

While truck and automobile makers might be able to weather a strike if it lasted, less than two months, the parts maker has been buying from hand to mouth all the year, and would be obliged to shut down almost immediately. And, of course, with the curtailment of the supply of parts, truck and automobile production would stop also.

Arthur B. Walker has assumed his duties as sales manager of the Buffalo Pressed Steel Co. During the war he was in the Handley-Page division of the Bureau of Aircraft Production, and before that was associated with the McCord Manufacturing Co., Gouder, Paeschke & Frey Co. and the Edward G. Budd Manufacturing Co.

SERVICE BODY FORMALLY ORGANIZED.

The new Automotive Service Managers' Association was formally organized Sept. 3 at a meeting at the headquarters of the National Automobile Chamber of Commerce in New York. The following board of officers was elected to serve until the regular annual election in January:

President, Ralph C. Rognon, Vim Motor Truck Co.; vice president, J. W. Watt, Reo Motor Co. of New York; secretary, J. Howard Pile, Motor World; treasurer, E. V. Dirks, Buick Motor Co.; directors, E. Hunn, Packard Motor Car Co., chairman; J. H. Lange, Three-Point Truck Co.; J. M. Grant, White Co.; F. J. Lowe, Bronx County Auto Co.; H. M. Holt, Willys-Overland, Inc.; Al. Rawson, Reo Motor Co. of Newark.

The new service association has the hearty support of Alfred Reeves, general manager of the National Automobile Chamber of Commerce, and C. M. Brown, representing the Automobile Dealers' Association of New York. Its purpose is to improve and facilitate cooperation between the automotive industry and owners of its products through efficient service by promoting meetings for discussion and solution of problems, by the education and welfare of automotive mechanics, the interchange of ideas and the establishment of kindred organizations.

DEMAND YEAR'S NOTICE OF INSURANCE CHANGES.

The National Automobile Chamber of Commerce has issued a general bulletin to its members calling attention to the classification by insurance officials of construction features affecting motor car risks, and giving the resolutions adopted by the N. A. A. C. directors in which it is suggested that one year's notice be given to manufacturers before any new plan of motor car insurance is put into effect.

The present plan of the insurance companies is to apply the new basis of ratings to cars produced on and after Jan. 1, 1920, and contemplates that each manfacturer submit his product to the Underwriters' Laboratories for review and classification, suitable blanks being furnished for this purpose. For cars produced up to Jan. 1 the present practise of basing insurance rates will, it is stated, be continued after that date.

CLYDESDALE TRUCK'S PERFORMANCE.

A 2½-ton Clydesdale truck recently completed a somewhat notable run from Akron, O., to St. Louis. The 710 miles was covered in 30 hours, 50 minutes, at an average speed of 22 miles an hour. It was loaded with automobile tires. Not a small portion of the credit is due to the fact that the truck was equipped with 42 by nine-inch Goodyear pneumatic cord tires.

TRAILERS AND PARTS NOT TAXABLE.

There has been considerable discussion concerning the interpretation of the revenue act as to the war tax on trucks and trailers. For the instruction of its dealers, the King Trailer Co., Ann Arbor, Mich., has sent out a letter showing that trailers and trailer parts are not taxable, in which it quotes from regulations No. 47, article 12, relating to excise taxes, as follows:

"Automobile trucks and automobile wagons—The tax is three per cent. of the price for which automobile trucks and automobile wagons are sold by the manufacturer. An automobile truck or automobile wagon is a self-propelling vehicle primarily designed or adapted for the transportation of property. The act specifically exempts tractors, even if sold in combination with a trailer."

Article No. 16 further states: "Automobile trailers, regardless of the number of wheels which they may have, are not parts of or accessories for automobiles, but rear portions of automobile trucks, automobile wagons or other automobiles not properly called trailers, are taxable as a part of the automobile."

LABORATORY FOR OIL TRADE.

The American Petroleum Institute of New York is planning further co-operation with the automotive industry in its attempts to solve fuel problems, the work to include the establishment of a large research laboratory for the study of all matters concerning the oil trade.

The oil directors approved the expenditure of $1,000,000 for the project, the financing to be in charge of a committee consisting of Henry L. Doherty, New York; Walter C. Teagle, president Standard Oil Co. of New Jersey; Dr. Van H. Manning, director of the Federal Bureau of Mines, and R. L. Welch, general secretary of the institute.

As much of the work of the laboratory will be directed to engine problems, the committee plans to work in conjunction with automotive leaders.

BIG FIELD FOR TRUCKS ABROAD.

H. A. Conlon, director of sales of the Acason Motor Truck Co., Detroit, gives figures for the distribution of trucks in foreign countries as follows:

Argentine, 100; Colombia, 2; Brazil, 427; Cuba, between 1500 and 2000; Australia, 2500; New Zealand, 1000; Denmark, 930; Burma, 80; India, 1000; Japan, 207; Mexico, 400; Holland, 500; Norway, 400; Sweden, 1800; Tasmania, 125; Great Britain, approximately 50,000; Spain, 1500.

In the face of these figures Mr. Conlon is convinced of the great opportunity for the American truck in the foreign field.

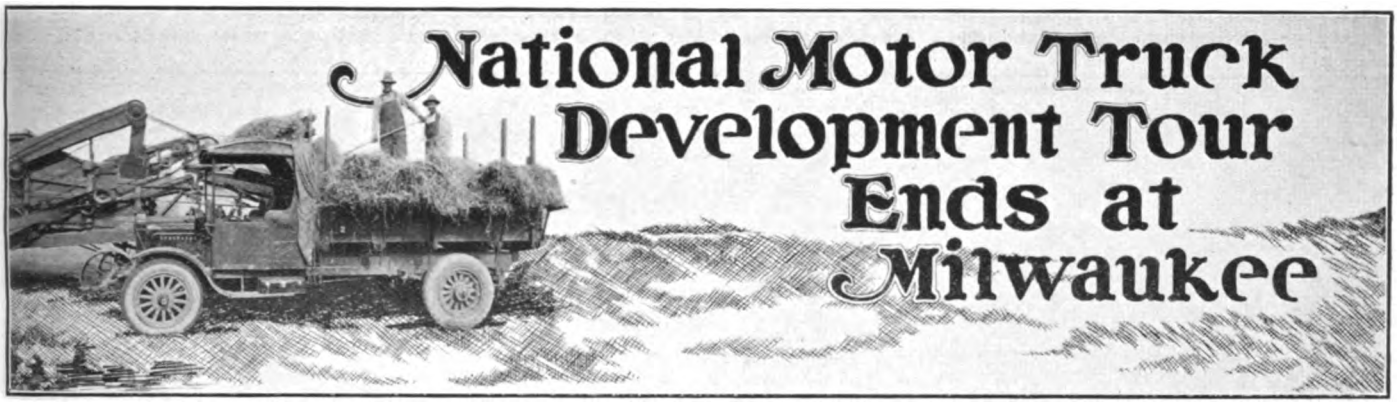
The Martin-Parry Corporation, Indianapolis, is to enlarge its factory to double its present capacity.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 10. PAWTUCKET, R. I. OCTOBER, 1919.



National Motor Truck Development Tour Ends at Milwaukee

Milwaukee, Wis., Oct. 4.—The National Motor Truck Development Tour has passed into history as one of the most remarkable events ever planned and carried out to a successful fulfillment. The fleet of 20 trucks, manned by 80 men, rolled into this city last night a full two hours before the time scheduled, the big machines bearing the marks of their 60-day 3000-mile journey over all sorts of roads and through varied conditions of weather, but all in good shape to repeat the drive should there be need. Notable indeed was the fact that, beyond a few tire punctures, one or two minor mishaps and small adjustments, the entire fleet came through in splendid mechanical condition.

All the trucks were on pneumatic tires and their capacities ranged from one to 2½ tons. Each machine was driven nearly 5000 miles, including the extra mileage for demonstration hauls. They were worked on farms and in plowed fields, where every conceivable phase of the use of the gasoline motor power was demonstrated, including the operation of threshers, corn shellers, ensilage cutters and hauling of produce, grain and live stock.

Not the least remarkable phase of this great tour is the fact that the many competitive truck interests throughout the country should have agreed for the time, under the good offices of the National Association of Motor Truck Sales Managers, to pool their interests in the carrying out of an enterprise that was calculated to ultimately work for the mutual benefit of all branches of the industry, manufacturers, distributors, dealers and finally and most important, to the farmers and other users, to whom the modern motor truck should prove to be one of the most priceless boons of the 20th century.

The well arranged itinerary and capitally planned meetings and demonstrations had been preceded by a campaign of publicity which in most cases placed the sections through which the tour passed into a receptive mood, and the expectations were realized by the appearance and performances of the participating trucks. The idea that a boost for the truck in general was a boost for the entire industry was carefully adhered to, and this event cannot fail to be of incalculable and far-reaching benefit throughout the section of the country reached by the propaganda so graphically disseminated. Director General W. F. Sturm, Tourmaster M. D. Scott and Tour Director A. R. Kroh, as well as the other officials, can only be spoken of in terms of the highest praise for their indefatigable efforts to which the great success of the undertaking was in so large a measure due.

The trucks taking part, were as follows: Atlas, 1500 pounds, Barry convertible body; Atterbury, 4000 pounds, rack side body; Bethlehem, 3000 pounds, wire screen express; Clydesdale, 3000 pounds, eight-in-one farm; Diamond T, 3000 pounds, farm special; Gramm-Bernstein, 4000 pounds, five-in-one, hand hoist; Hawkeye, 3000 pounds; Master, 3000 pounds, semi-stake; Maxwell, 3000 pounds, stake; Republic, 5000 pounds, special farm; Selden, 3000 pounds, five-in-one farm; Service, 3000 pounds, special farm; Signal, 2000 pounds, six-in-one farm; Sterling, 5000 pounds, flareboard express; Winther, 3000 pounds, express. In addition to these were a 5000-pound Sterling truck affording Goodyear tire service; a 3000-pound Master truck giving Firestone service; a Diamond T 3000-pound truck giving Standard Oil gasoline and Vacuum lubricating oil service; a Packard car, furnished by the Goodyear Tire & Rubber Co., carrying Tourmaster Scott; a Cadillac car, furnished by the Firestone Tire & Rubber Co., carrying Tour Director Kroh and other officials.

Following is an account of the tour by days, taking it up from the night control at Minot, Sept. 1:

From Minot to Rugby.

Rugby, N. D., Sept. 3—Tuesday was occupied with various demonstrations, including the following: The Winther and Sterling trucks made a nine-mile trip out to Burlington to the Davis Mining Co., to haul coal into the city, the load of the former being 1½ tons and the latter 2½ tons; the Signal, Service, Diamond T and Clydesdale trucks went to the farm of T. Wiltman, 8½ miles out, to haul threshed wheat to town; the Republic, Gramm-Bernstein, Hawkeye and Atlas hauled threshed grain to town from G. State's farm, 10 miles out.

The first part of the afternoon was taken up by a band concert, followed by an address by A. R. Kroh, official lecturer, which accentuated the demonstrations and exhibitions made before and after the formal afternoon meeting. Later in the alternoon, as a demonstration of the utility of the power plant of a truck for such work as grinding grain seemed to be timely, a feed grinder was obtained

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from a local implement supply house, and it was connected with the Master truck. Several bushels of barley were quickly ground up and the practicability of this form of farm energy was shown in the presence of a large company of interested spectators. Moving pictures were taken of the outfit in operation.

One concrete result of the benefit derived from the presence of the trucks in this locality was seen in the statement of a member of the firm of Minot-Stone-Ordine-Wells Co., wholesale grocers, that it was the purpose of his company to install pneumatic tired motor trucks for its city and inter-city hauling.

At 7 o'clock Wednesday morning the caravan got away for Towner, a distance of 52 miles. Although the roads were by no means good, the tourists arrived there in good time for lunch, and an opportunity was given for examination and explanation of the big machines to a company of several hundred farmers drawn from a total town population of only about 600. In Rugby, which is 25 miles distant from Towner, the evening was devoted to a band concert by the Naval band, and addresses by the tour personnel to an enthusiastic audience of citizens. A lunch was served to the entire party of tourists at 11 p. m. The feature of the practical demonstrations at this point was the hauling of a load of wheat, consisting of 51 bushels, from the farm of J. G. McClintock to town, 58 miles.

Two Days Demonstrations.

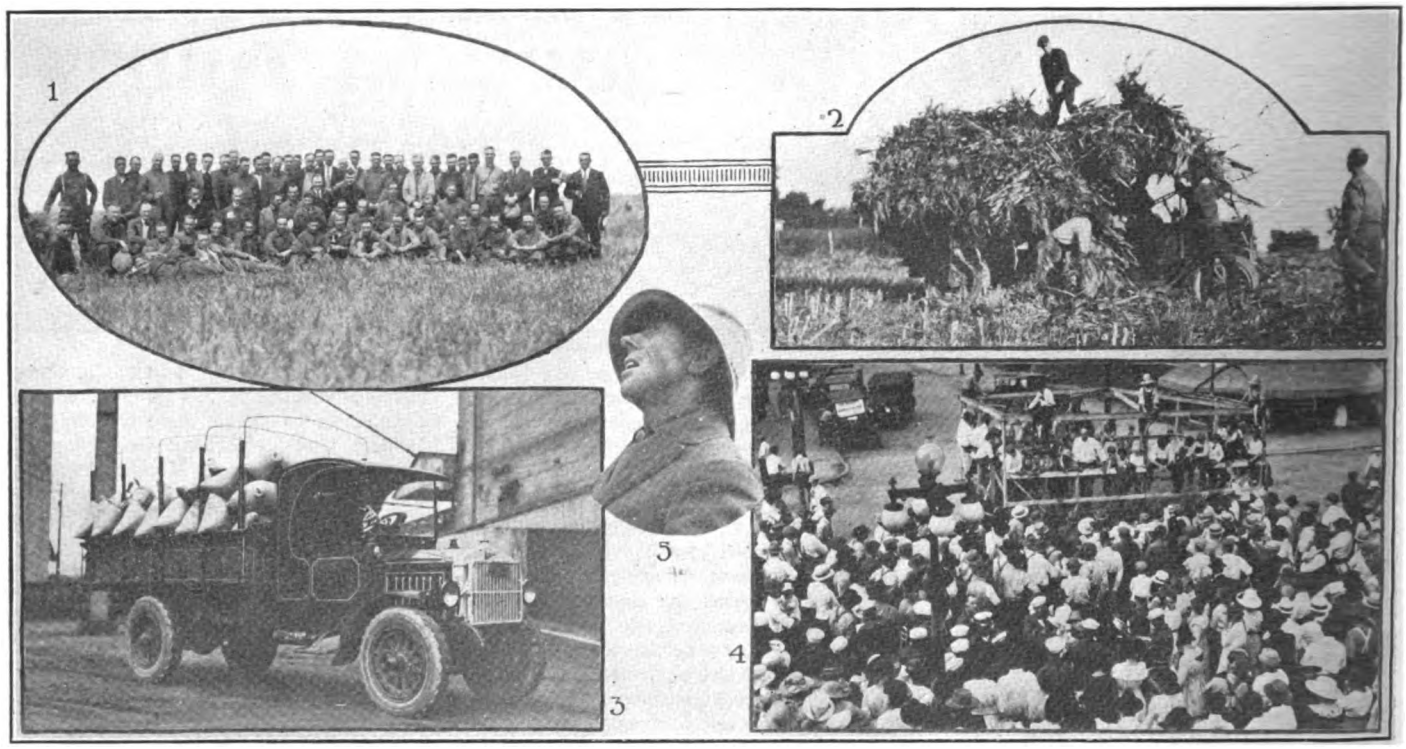
Devil's Lake, N. D., Sept. 4—This day's total mileage was 67. The noon control was Church's Ferry, 44 miles from Rugby. Here the speaker in behalf of the purpose of the tour was Mr. Hannon of the Clydesdale. The cavalcade reached Devil's Lake at 3 o'clock, and it was piloted to town by C. S. McCulloch, Ford agent and garage proprietor, who officiated as chairman of the local entertainment committee. At the evening exercises Mayor Edward F. Flynn gave the address of welcome and Fred J. Traynor, president of the Commercial Club, proved himself a very capable toastmaster.

As the schedule called for a two days stop here, there was ample opportunity for demonstration work, as well as to participate in the social festivities the committee had arranged. The demonstrations took various forms and made a deep impression on all who witnessed them. They included the following: Hawkeye—Hauled 3480 pounds of coal from this town to the farm of C. W. Kelly, 9.2 miles for round trip. Atlas—Hauled 1610 pounds of loose oats from a farm to elevator in town, 8.7 miles for round trip. Service—Hauled 3660 pounds of grain from a farm to an elevator in the city, 17.4 miles for round trip. Selden—Hauled four hogs, 1210 pounds, from farm to slaughter house in town, 37.8 miles for round trip. Diamond T—Carried 3980 pounds of grain from Bellehalle to elevator here, nine miles for round trip. Bethlehem—Hauled 3500 pounds of merchandise and groceries around city for Lake Grocery Co. Maxwell—Carried two furnaces, 2700 pounds, 29 miles for round trip, from city to a farm. Sterling—Hauled two loads of bundled wheat from farm to thresher, 2000 pounds for each load, 1.4 miles average round trip; also a load of 3200 pounds of loose grain 12.5 miles from same farm to an elevator in town. Atterbury—Hauled two large steers, 3450 pounds, 14 miles round trip, from farm to slaughter house.

The morning of the second day, the Sterling truck hauled 4000 pounds of fence posts, 24 miles round trip distance, from town to the Hocking farm. A big parade, in which local trucks united, was held in the afternoon, and in the evening after the band concert, Prof. Haig, county school superintendent, who has large farming interests in this vicinity, made an address and was followed by others, including members of the touring party and townsmen. Then came the showing of the motion pictures and a dance.

Devil's Lake to Lakota.

Lakota, N. D., Sept. 7—Today's run from Devil's Lake was only 30 miles, and the start was not made until 2:35 p. m. On the arrival at 4:15 the opera house was filled with an audience of expectant farmers and citizens. Mr. Kroh made an address and explained the moving pictures, which proved an entertaining feature. Mr. Kroh also had a special conference with local sales representatives. Although the hotel accommodations were insufficient the tourists fared sumptuously at the homes of citizens.



Events and Happenings During the Tour: 1, The Personnel of the Caravan That Educated the Farmers; 2, Loading a Truck in a Field with Cornstalk for Ensilage; 3, Sterling Truck Loaded with Bran for Demonstrating Haul from St. Paul to Winona, Minn.; 4, An Average Small Town Meeting with A. R. Kroh, Official Lecturer, Speaking; 5, One of the "Intensely Interested" Spectators at a Meeting.

Heavy Rains at Lakota.

Larrimore, N. D., Sept. 8—Hauling demonstrations had been planned for the morning at Lakota before the departure for this point, but the heavy rains kept the farmers from threshing and the tour trucks could not find anything to do in the way of hauling grain. The Hawkeye did manage, however, to find a load of rye, which was hauled from a farm to the elevator in town, a round trip of 13.2 miles.

The party left Lakota at 11:45 and reached here at 3:45, a stop being made en route at Michigan City, where there was a band concert and address by Mr. Luckett, who is with the Master truck. The day's mileage was 44.

J. W. Lockhart, chairman of the local

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committee, had the town fully alive to the importance of the movement, and the introductory talk by Rev. Mr. Wallace of the Methodist church was certainly along the right lines and the speakers representing the tour had an easy task in carrying out their part of the programme. Larrimore is reported as being one of the bright spots of the entire trip.

Parades in the Rain.

Grand Forks, N. D., Sept. 10—A two days stop was made here. A rain was falling when the party arrived from Larrimore at 11:05, the run of 30 miles having been made in two hours. Outside the city the party was met by the local committee, headed by L. W. Myers, secretary of the Chamber of Commerce; other members being George Dixon, Maxwell agent; Mr. Sandley of the GMC Truck Co.; W. Haverland of the Dakota Motor Co., and W. S. Sims, representing the Nash. A parade was held, regardless of the weather, and some of the local solid tired trucks, which joined the calvacade, got into trouble on a stretch of unpaved roads in East Grand Forks, but the pneumatic tired tour trucks had no difficulty in demonstrating the efficiency of pneumatics under such conditions. Another parade was held in the evening, which was followed by a session at the Commercial Club, the speakers being Mr. Kroh, Lieut. Willson of the Naval band, Maj. Lubeck of the United States Motor Transport Corps, and Mr. Luckett of the Master truck. The local speakers included the Mayor, Dr. Wheeler, Secretary Myers of the Commercial Club and Mr. Glembo, district manager of the Vacuum Oil Co.

On Wednesday, the second day, there was a dealers' meeting at the Commercial Club in the evening, the rest of the day being occupied with demonstrations by the big trucks In the afternoon the Sterling, Service, Clydesdale, Republic, Gramm-Bernstein, Atterbury, Winther, Hawkeye, Atlas, Signal and Master trucks were sent out to the Redwing farm, owned by A. Redwing and A. J. Ulvedual, to take part in some threshing operations. Upon arrival at the farm a separator being needed from another farm, the Winther and Master volunteered to get it. This involved a trip of nine miles and the machine was found in a field made soft by the recent rains. The Winther, however, hauled it out on to the road without difficulty, and then, assisted by the Master, the big machine was hauled back to the Redwing farm, where the thresher was in operation. The round trip of 18 miles was made in two hours and 15 minutes. The Master also later hauled a water tank a distance of five miles, round trip, performing in a short time work that it was estimated it would require horses three hours and 15 minutes to perform.

Three Days at Fargo.

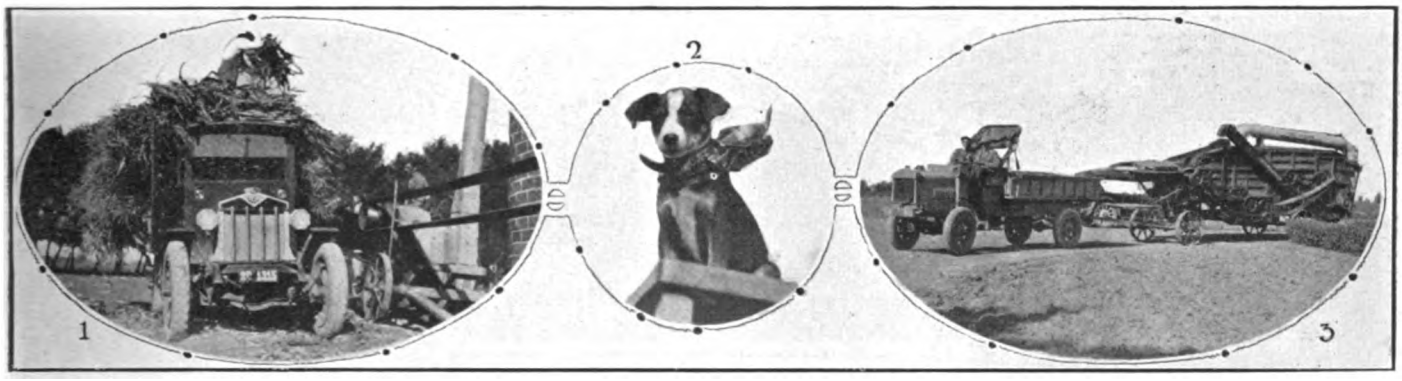
Fargo, N. D., Sept. 13—As the cities of Fargo and Moorhead are the centers of a considerable territory devoted largely to agricultural interests, the itinerary provided for a stay of three nights at this point, in order that the demonstrations might be more comprehensive than at smaller points.

The start was made from Grand Forks at 7:15 a. m. Thursday the 11th. Three tons of merchandise were taken from the wholesale house of Nash Brothers in that city, for the towns of Buxton, Cummings and Hillsboro. The run to the last place was 38 miles and here lunch was eaten. There were many farmers on hand anxious to learn about the value of the truck on the farm, among the onlookers being ex-Governor Searles. On the way from Hillsboro to this city a road meeting was held at which a special publicity committee was appointed, consisting of Mr. Kelly, Sterling truck; Lieut. Willson of the United States navy, Mr. Elgin of the Firestone company and Mr. Metts of the Goodyear company.

Fargo was reached at 5 p. m., the total mileage for the run being 87. The tourists were met a few miles out of town by H. W. Horton of the Horton Motor Co. and escorted into the city. The entire party was entertained in the evening at the Commercial Club. The speakers consisted of Messrs. Kroh, Lubeck and Willson, and three prominent business men voiced the city's welcome.

In the cities of Fargo, N. D., and Moorhead, Minn., there is a consolidated organization, the Fargo-Moorhead Automotive Association, which has stimulated trade conditions here to a very healthy condition, and the temper of the citizens and agriculturalists of the section was in the right mood to get the full benefit of the big demonstrations of hauling of various kinds scheduled for the second day. These included the following:

Service—Hauled two loads of potatoes 18.8 miles, 7380 pounds total load, from farm to warehouse, for E. J. & O. A. Headland, route 3. Signal—Hauled load of potatoes, 3475 pounds, 8.7 miles, from farm of C. E. Dunseth to warehouse. Diamond T—Hauled 2946 pounds of lard 20.7 miles from Equity Co-Operative Store Packing Co. to Manchester Biscuit Co. Republic—Hauled load of potatoes from field to warehouse in city, 29 miles round trip. Gramm-Bernstein—Hauled one load, 5100 pounds, of potatoes from field to warehouse, 19.2 miles, round trip. Selden—Two loads of potatoes, 3660 and 3630 pounds respectively, average round trip distance, 18.6 miles, plus a loaded trailer, 4430 pounds, seven miles, from field to warehouse. Winther—Load of corn fodder, 2¼ tons, 2½ miles loaded, 11 miles round trip, from field to silo. Maxwell—Two loads potatoes, each consisting of 3700 pounds, eight miles round trip from Schroeder Brothers' farm to railroad in town. Atlas—Hauled $10,000 prize calf from farm to Clydon, 970 pounds, round trip distance, 27 miles. Atterbury—Four big loads of potatoes, round trip, 36.7 miles, from farm to freight car at Moorhead, Minn. Hawkeye—Load potatoes, 4150 pounds, 14.6 miles round trip, from farm to freight car at Moorhead.



Reflections of the National Demonstration Tours. 1, Clydesdale Truck Discharging a Load of Cornstalk at an Ensilage Cutter; 2, "Trux," the Official Mascot; 3, Winther Truck Hauling a Threshing Machine, an 18-Mile Trip That Was Finished in Two Hours.

Rousing Evening Session.

At 8 o'clock in the evening there was a rousing meeting at the Commercial Club, attended practically by all the members of the tour and nearly every truck dealer and salesman in Fargo and Moorhead, together with a number of prominent bankers. An effort was made to impress upon the minds of those present that this tour was primarily for educational purposes. Mr. Kroh, in his remarks, emphasized the fact that, regardless of who ultimately gets the business, the farmer needs the motor truck. A vote of thanks was extended to the National Association of Motor Truck Sales Managers for the wonderful educational work the tour is doing, especially in the way of hauling in and around the cities of Fargo and Moorhead. The president of the Fargo-Moorhead Automotive Association expressed the desire of that organization to keep in touch with the national association regarding matters of interest to the automotive industry.

The events of Saturday, the third day, included a parade in the nearby city of Moorhead in the afternoon, after which

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Mr. Kroh addressed the crowd in the street. And at 6 o'clock another banquet was served jointly by the Fargo-Moorhead Automotive Association and the Commercial Club, and a mass meeting of business men, truck dealers and bankers followed. Mr. Kroh spoke especially of the good work done in this section and urged that a campaign be instituted that will follow up the excellent impression already made.

Sunday Laws at Wahpeton.

Wahpeton, N. D., Sept. 14—The caravan left Fargo at 1:15 p. m. and reached here at 6:25, after a run of 54 miles. At Dwight, nine miles out of town, the tourists were met by about 50 automobilists, and before proceeding a concert was given by the Naval band. It appears that the Sunday laws are particularly Puritanic at this place, as notice was given that if a band concert and meeting was attempted, the party would be put under arrest. But the large body of farmers who had gathered to meet the tour had made up their minds to have the exercises occur as scheduled and permission was finally secured. The band played several selections and then Mr. Kroh was introduced by ex-Senator Purcell, and his address was closely followed.

Wahpeton to Sisseton.

Sisseton, S. D., Sept. 15—The start from Wahpeton was made at 1 p. m. and the arrival here was at 6 o'clock, two short stops being made en route, at Fairmont and Rosholt, where the band gave several selections. At the latter place about 125 farmers had gathered at the special invitation of P. C. Dahl, one of the influential land owners of this section, and the official lecturer of the tour gave a short talk.

A number of demonstrations were given at Wahpeton before leaving. The Gramm-Bernstein hauled a big load of gravel from town to the home of Judge Purcell, 3.6 miles round trip. The Republic hauled loose grain from a thresher on a farm to the elevator at Wahpeton, a round trip of 53.4 miles. The Selden conveyed a load of gravel from Wahpeton to a farm 17.2 miles distant, in 45 minutes, then went to another farm 6.3 miles away, crossed a plowed field a distance of 1.5 miles and hauled a load of 3358 pounds of loose grain to the elevator at Wahpeton, 15.9 miles; the return trip required 45 minutes.

The town of Sisseton proved to be one of the most interesting stopping places, as the streets were full of farmers, who had gathered to hear Mr. Kroh's address. In the audience were included many graduates of Carlisle college and other Indian schools.

Demonstrations at Watertown.

Watertown, S. D., Sept. 17—Although the itinerary called for a mileage of only 60 miles between Sisseton and this place, the roads were found bad and long detours were necessary on account of bridges and culverts being washed out, so that the total mileage reached 86, and the running time was eight hours, with a stop for luncheon at South Shore.

In the meeting held at Watertown, the evening of arrival, a stirring address of welcome was given by Lieutenant-Governor McMasters of South Dakota, who spoke strongly in favor of good roads and the importance of motor trucks to the farmer. The response in behalf of the tourists was by Capt. Mitchell of the Motor Transport Corps, who had been sent out by the War Department to relieve Maj. Lubeck.

The following demonstrations were made the second day: Sterling—Hauled two loads of potatoes for W. E. Gwing, 19 miles round trip. Service—Went to a farm with an agricultural class of 18 young men from the Watertown high school, and hauled a load of potatoes from farm to city, 5.9 miles. Republic—Hauled load of grain 11.1 miles round trip from a farm to an elevator in town. Winther—Hauled a load of 2970 pounds of potatoes from a farm to the city, 10.5 miles round trip. Clydesdale—Hauled potatoes from a farm to city, 19.5 miles for round trip.

A big dealers' meeting had been planned later in the day at the Elks' Club, but owing to lack of co-operation on the part of dealers, it was abandoned, but a talk was given in the street to a good sized crowd.

Enthusiasm at Brookings.

Brookings, S. D., Sept. 18—Leaving Watertown at 8:25 a. m., the tour arrived here at 5:35 p. m., the total mileage being 61. Quite an extended stop was made at Arlington for the purpose of demonstrations. Several of the trucks carried loads from Watertown to Arlington, the distance between the two points being 41 miles, as follows: Winther—six barrels gasoline, weight 2460 pounds. Maxwell—Hauled five drums of gasoline and one drum of oil, weight 2540 pounds. Atterbury—Hauled 10 drums of gasoline, 4100 pounds.

The demonstrations at Arlington included: Atterbury—Hauled 30 bags of bran to Brookings, 30 miles, 3000 pounds load. Service—Hauled cattle 18 miles round trip, 2740 pounds weight, from farm to slaughter house in Arlington. Signal—Hauled from the farm of Albert Negstad cattle weighing 2620 pounds, 18.5 miles round trip, to slaughter house. Maxwell—Hauled 30 bags of bran, 3000 pounds, from Arlington to Brookings. Republic—Hauled a load of rye from a farm to the elevator at Arlington, 13.6 miles round trip.

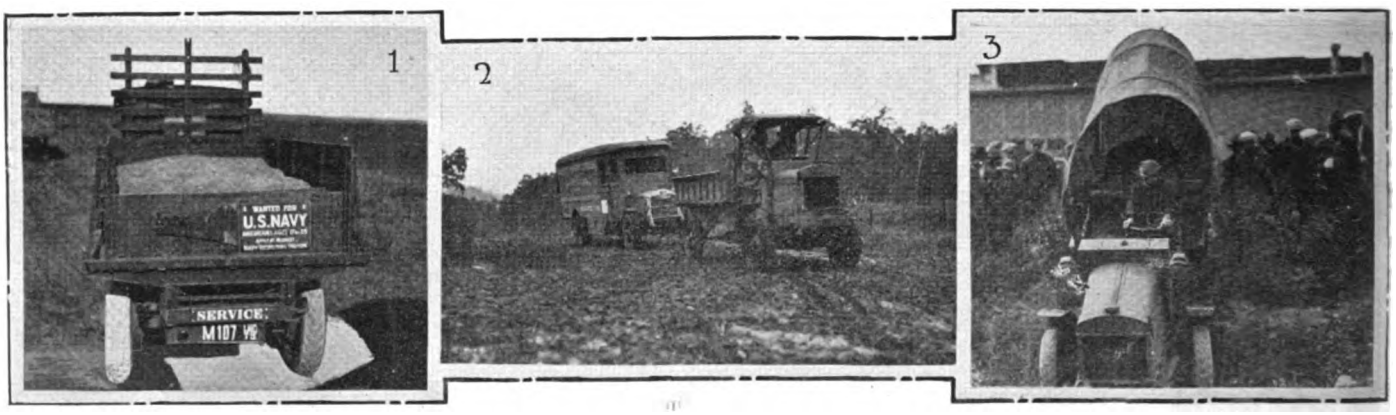
In order to load the cattle on to the Signal and Service trucks, it was necessary to dig holes for the rear wheels in order to lower the beds of the truck bodies enough to get the cattle aboard, and the farmers were interested to see the way the big trucks pulled themselves out of the holes after taking on their loads. While these demonstrations were taking place in the country, Mr. Kroh talked to a good crowd in town and the interest in the machines was even more marked after this address than before.

A meeting was called at night at the Commercial Club and there were present truck and passenger car men, bankers and newspaper representatives. The band concert was held on the grounds of the high school, moving pictures were shown and Lieut. Willson, Capt. Mitchell and Mr. Kroh spoke.

Tracy, Minn., Sept. 19—The tour crossed into Minnesota today. Brookings was left behind at 7:25 a. m. and Tyler, Minn., was reached at 9:55, after a run of 41 miles. Here Mayor Hansen gave the address of welcome and the populace showed a deep interest in the mission of the caravan. Although this town was almost destroyed by a cyclone about a year ago, it bore little evidence of it.

The departure for Tracy was at 2:05 p. m., and a fine reception was met with on arrival. The mayor, Mr. Filkson, introduced Lecturer Kroh, Lieut. Willson and Capt. Mitchell. Though Tracy is by no means a large city, the interest manifested was intense. The meeting took

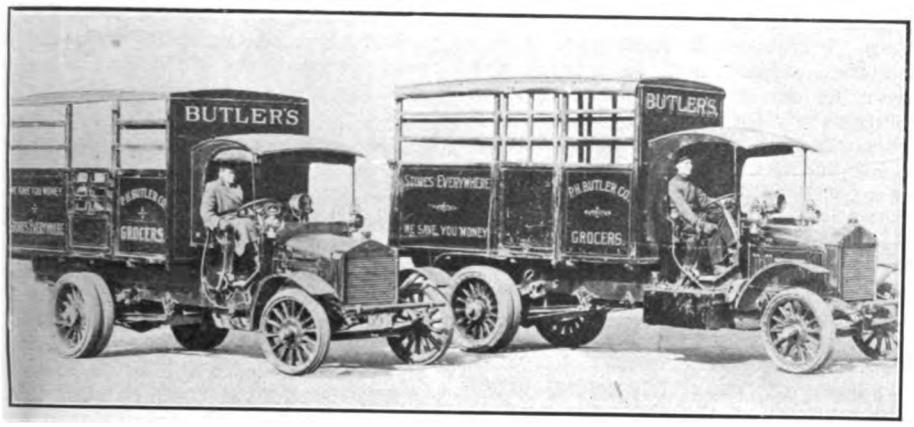
(Continued on Page 463.)



With the Tour Through the Northwest: 1, Service Truck Loaded with Wheat Drawn from the Thresher to the Elevator; 2, Winther Truck Negotiating a Stretch of Bad Road, Followed by the Goodyear Tire Service Machine; 3, an Incident of the Demonstrating—The Winther Truck Taking a Header Into a Ditch to Show Its Climbing Power.

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CHAIN STORE STOCK DISTRIBUTION COST WITH 42 PIERCE-ARROW TRUCKS



Two of the Fleet of Five-Ton Pierce-Arrow Trucks Operated by James Butler, Inc., New York City, for Distribution of Stock to More Than 500 Stores and 32 Markets.

CHAIN store operation has been highly developed in America. What is probably the largest single operator in this country is James Butler, Inc., a concern that has more than 500 stores and 32 markets, the greater number within New York City, and practically all of them within a radius of 66 miles of the metropolis.

The stores are small and frequently close together. The number has more than doubled within six years. This increase has been practical through the use of power vehicles for distribution of stock. The stock for all these stores, or at least the greater part of it, is distributed from a warehouse at Washington and Hubert streets, New York City.

The stores deal principally in food and household supplies and the stock is received in New York at railroad and shipping terminals and transferred to the warehouse and is sent to each store as requisitioned. The store stocks are kept at certain standards and distribution must be continuous.

Until 1908 animals were used exclusively, deliveries being made from warehouse to stores within a practical working radius of the warehouses, and beyond that zone by railroad and express. The first truck was bought in 1908, a three-ton machine, that was used experimentally. The vehicle was found economical and its possibilities were studied. Other trucks were bought and in 1913 the company was using 25 five-ton trucks and 16 one-ton trucks of three different makes and upwards of 400 horses.

At that time horses were used for transfer of freight from shipping terminals to the warehouse and for delivery from the stores. Some of the largest stores had a ton truck for delivery as well as one or more horse wagons. The distribution of stock was made by the five-ton trucks.

In 1914 the company bought a five-ton Pierce-Arrow truck. A few months later it purchased five more, and in 1916 34 more, and since that time it has added to its fleet until it now owns 59 five-ton and three two-ton trucks. Of these machines 42 are used for stock distribution and the remaining 20 for delivery of bakery products.

The store delivery trucks are operated within a 66-mile radius and haul about 750 tons of freight a day. The longest drive is to Freehold, N. J., a round trip of 132 miles. Other long hauls are to Long Branch, N. J., 116 miles; Red Bank, N. J.; 120 miles; Peekskill, N. Y., 95 miles, and Norwalk, Conn., 95 miles. Full five-ton loads are carried, and in some instances a load is carried to a destination, but as a rule the delivery is made at from four to six stores, five being an average. The deliveries for a route may be as few as three or as many as 10. Some trucks having short routes make two trips a day, and generally the stores are delivered stock three times a week.

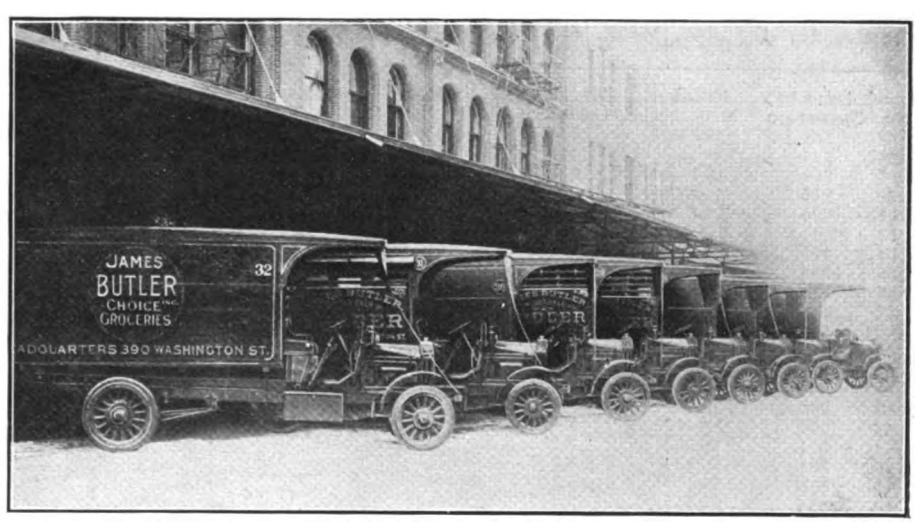
According to the operating plan a truck has two routes, which are served alternate days, and this means that one machine can haul the stock for from 20 to 25 stores. The trucks are divided, however, as to service, some of them carrying meats, which are cut at the warehouse and sent to the stores ready for delivery. These trucks have enclosed bodies to protect the meats. At certain times of the year buyers go to the open air markets where the produce, fruits, vegetables, etc., is brought into the city, and their purchases are collected and delivered direct to the stores.

The operating plan is to have the trucks that have the longest routes report mornings at the warehouse loading platform at specific localities. The orders for each store are in readiness. Each truck crew does the loading and as the machines are loaded others take their place at the platform until all the vehicles are on the road. While the first trucks are being loaded the short route trucks haul stock from the terminals to the warehouse, so that there is but little if any lost time. The trucks return as the route deliveries are completed and are again loaded, the regular route work being supplemented by special trips as necessary.

The order for each store is loaded in the order of delivery, that is, the first to be unloaded is the last to be put on the truck, and this requires time, from an hour to an hour and a half being required for each machine. As the route stops are comparatively few good time can usually be made. The trucks that start earliest complete their work early, the fruit and vegetable trucks reaching the garage first and the regular route trucks the last. In the event of short route work the trucks haul freight from the terminals for the remainder of the day.

The trucks are kept at a single garage, which is operated by a separate company, which maintains the machines. The machines as they are driven in at the end of the day are seen by the foreman or superintendent, and the driver reports the number, the time out in hours and minutes, the gasoline used in gallons, oil in quarts and kerosene in pints, the grease in pounds and the condition of the vehicle. These are entered in ink in a loose leaf book by a clerk, and with this is entered the time of the machine in the garage, this record covering 24 hours.

The night foreman examines the book and from the reports assigns men to do



Part of the Enclosed Body Truck Equipment, Used for Meat Haulage, at the Loading Platform of the Warehouse at Washington and Hubert Streets, New York City.

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whatever work is necessary to restore the truck. Should more than a night be required the truck is withdrawn from service. Repairs parts are available in the stock room and a work of considerable proportions may be undertaken. The overhauling is done days by a separate force of men.

If a truck is brought in in good condition it is washed, greased and oiled and the fuel, oil and water tanks filled. If a repair or adjustment is made, or work on a tire done, this is recorded. All of the work or repair or supplies furnished are charged against the truck. A separate tire record is kept. In the event of a garage tire change the record is amended, but should a wheel be damaged on the road it is replaced, no further change of which is made. For this reason the wheel record may vary somewhat from actual mileage of the truck.

The garage has an emergency truck that is sent out when report of accident is received and if repair is practical this is made. If not the driver of the nearest truck is notified by telephone and he takes the load and distributes it and the crew of the damaged truck remain with it until it can be returned to the garage.

Each truck is overhauled annually, and usually in rotation, and complete restoration is made of the chassis and body. There is usually one truck in the shop being overhauled. Each repaired truck is fully tested before delivery to the traffic department.

The drivers of the trucks are carefully trained. They work first as helpers and qualify as drivers under observation of different men until they can drive to the standard required. Each driver as given charge of a machine is regarded as is the manager of a store. Exact record is made of the condition of the truck.

Each day against the vehicle is charged the cost of gasoline, oil, kerosene, grease, washing, cleaning, adjusting, repairing, labor or material of any kind, tires as installed or repaired, wages and the prorata of the overhead, which includes insurance, taxes, rent, depreciation, lighting, heating, water, clerical work, stationary, telephone, etc. From this record the precise expense of operation is obtainable, itemized or aggregate, for the day, week, month or year, or for the period a vehicle is driven by any one man.

The driver is expected to do all the work required of him for the lowest practical cost. Upon this use depends his wage. The man who makes the best record is the most valuable to the concern. But the truck must be kept to a standard of condition. As a truck manager the driver has the same responsibility as a store manager. The men are encouraged to economize truck management, and there is keen rivalry between them.

Before the Pierce-Arrow equipment was acquired the concern had obtained an economy in distribution of more than 50 per cent. and this statement was based on a precise knowledge of the use of animals, railroad and express transportation.

Some extremely interesting figures are available of the 42 trucks used for store delivery covering the fiscal year ending Oct. 31, 1918. These show the following:

Average days of use (300 working days)	272
Average miles a year	13,140
Average miles a day	46.5
Average cost a day, excepting depreciation and interest on investment	$17 15
Miles a gallon (fuel)	3.3

The following is an example of the summarized cost of a single truck:

Days worked	273
Miles	14,948
Gallons of gasoline	3,696
Average miles a day	55
Average miles a gallon	4.1
Cost:—	
Wages	$1,971 41
Tires	910 20
Gasoline	986 78
Oil	34 06
Mechanic's expense	38 96
Material	725 71
Insurance	300 00
License	51 25
Garage, including office overhead	443 60
Total	$5,481 97
Average cost a day	$20 08

The appended record shows that the 42 trucks were worked a total of 11,859 days and were driven a total of 551,842 miles, consumed 165,973 gallons of gasoline, for a total cost of $203,458.21.

The greatest number of days worked by any one truck was 310 and the least 236. The greatest mileage was 16,042 in 285 days and the least 9453 in 236 days. The average cost of truck service was $4,844.25. The greatest average expense a day was $22.18 and the lowest $13.17. The greatest annual cost a truck was $6057.21, and the least $4058.66.

The items of aggregate work and expense of each truck shown on this page is specially interesting.

ROCKWELL-MARLIN MERGER.

A merger of the Rockwell-Marlin bearing interests has been effected in the recent incorporation of Standard Steel and Bearings, Inc., in Delaware, with a capital of $10,000,000. The stock is divided into 100,000 shares of common and 100,000 shares of preferred, and the president of the new concern will undoubtedly be Albert F. Rockwell of Bristol, Conn., president of the Rockwell-Marlin companies.

Mr. Rockwell states that the operating plants of the Rockwell-Marlin companies are turning over about $8,000,000 worth of property and plants to the new company in exchange for common stock. The plants to be merged, according to Mr. Rockwell, are: Standard Roller Bearing Co., Philadelphia; Braeburn Steel Co., Pittsburgh, Pa.; Rockwell-Drake Bearings Division, Plainville, Conn.; Willow Street and Hamden Divisions, New Haven, Conn., and the Norwich, Conn., Division.

Several sales offices are ultimately to be centralized in New York. During the war the Rockwell-Marlin properties were engaged almost exclusively in manufacturing guns and ammunition, and in the report for 1918, President Rockwell said that the associated companies produced material valued at $30,000,000.

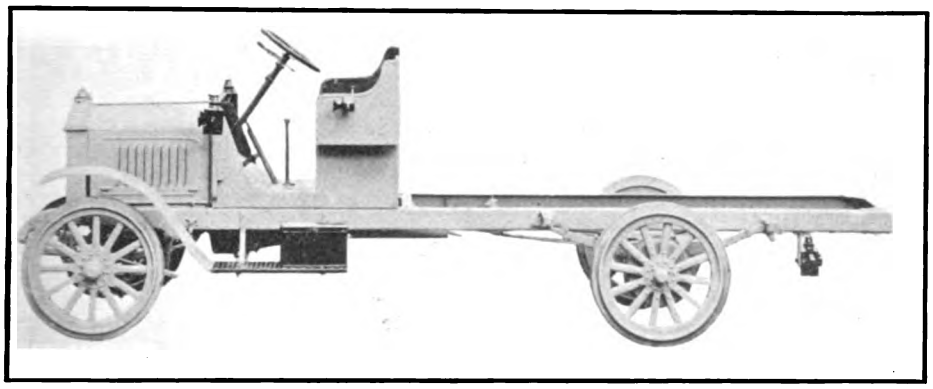
CROWTHERS JOINS GARY CO.

The Gary Motor Truck Co., Gary, Ind., builder of "Frank Dawson's Ten-Test Truck," has secured the services of Robert C. Crowthers as advertising manager. Mr. Crowthers is well known as a former Cincinnati automobile dealer, but for the past three years has been manager of the automobile department of the Cincinnati Commercial Tribune.

Truck No.	Days in Operation	Total Mileage	Total Gals. Gasoline	Total Expense	Average Daily Exp'e
25	282	13,000	3,867	$5,403 70	$19 16
26	273	14,984	3,696	6,057 21	22 18
27	269	12,215	3,725	5,090 18	18 92
30	275	12,201	3,625	5,095 25	18 53
31	300	14,377	4,077	5,132 53	17 11
32	300	13,222	3,714	4,791 39	15 97
34	285	16,042	4,403	5,490 06	19 27
35	294	14,966	3,952	5,224 00	17 77
36	282	14,228	3,815	5,248 51	18 61
37	276	15,038	4,311	5,476 40	19 80
38	289	14,359	3,839	5,008 94	17 33
39	297	13,433	4,005	5,485 26	18 47
40	249	10,199	3,453	4,889 27	19 80
41	294	12,530	4,219	5,081 81	17 28
42	288	15,188	4,077	5,587 69	19 40
43	266	12,483	3,676	5,474 85	20 59
44	301	13,950	3,992	5,137 34	17 07
45	284	13,633	3,922	5,350 31	18 84
46	296	13,402	4,135	5,222 41	17 64
48	284	13,848	3,755	5,243 69	18 46
49	281	11,952	3,960	4,706 88	16 74
50	269	9,818	3,745	5,111 12	19 00
51	250	9,666	3,604	5,375 22	21 50
52	310	14,338	4,259	4,799 34	15 48
53	280	12,774	3,948	5,145 04	18 38
54	287	13,567	4,072	4,853 48	16 91
55	281	14,239	4,265	4,478 90	15 94
56	264	21,395	4,848	5,639 29	21 35
58	291	13,126	4,261	4,452 43	15 30
59	301	14,475	4,266	4,506 56	14 97
60	292	12,402	3,896	4,723 12	16 17
61	280	11,446	4,100	4,464 57	15 94
62	293	12,743	4,131	4,088 91	13 95
64	284	11,819	3,807	4,474 40	15 75
65	270	11,224	3,807	3,995 22	14 80
68	290	13,980	4,064	4,164 08	14 36
69	263	12,210	3,800	3,611 38	13 73
70	236	9,543	3,309	3,513 04	14 90
71	287	12,670	4,186	4,112 62	14 33
72	275	11,579	3,675	3,902 17	14 19
73	308	13,399	3,954	4,058 66	13 17
74	283	9,819	3,758	3,790 98	13 39
Total	11,859	551,482	165,973	$203,458 21	

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STANDARD MODEL 56 ONE-TON TRUCK



The Standard Model 56 One-Ton Truck Chassis with the Standard Equipment, Built to the Conventional Design.

PRODUCTION of a new one-ton capacity truck chassis is announced by the Standard Motor Truck Co., Detroit, which is known as model 56, and this, like the three larger chassis built by this concern, is practically to a single design and is constructed of units that are recognized as standard products.

Standardization is emphasized as an insurance to the owner for in the event of need new units or parts may be readily obtained from several sources of supply. Claim is made that the chassis is built equal to the larger machines, from the best the industry affords, and measures to the Standard quality, now well established.

The engine is a Continental Red Seal, four-cylinder, four-cycle, water-cooled, L-head type, having cylinder bore of 3¾ inches and stroke of five inches. This is rated by the S. A. E. formula as 22.50 horsepower, but claim is made that it will develop 30 horsepower at 1200 revolutions.

The cylinders are cast en bloc from a special grade of iron with the water jackets integral, and the head is cast separately and is easily removable. The construction is such that the water circulation is positive and the cooling efficiency high. Before and after machining the castings are tested with water pressure.

The upper section of the crankcase is a casting and carries the main bearings, which, with the connecting rods, are accessible by removing the lower section, which is detachable without removing the timing gearset or flywheel and clutch housings. The pistons are each fitted with three diagonal split rings.

The crankshaft is a special steel drop forging, heat treated and ground, with large journals. The camshaft is drop forged from a high grade steel with the cams integral, and it is case hardened and accurately ground. The connecting rods are I section drop forgings that are heat treated.

The valves are interchangeable and these and the tappets are mounted in renewable guides. The valves are enclosed by quickly removable plates. The main crankshaft and the crankpin bearings are high grade nickel babbitt in bronze shells and are adjustable with shims. The camshaft is mounted in white bronze bearings and the small ends of the connecting rods, which oscillate on the wristpins, are bushed with phosphor bronze. The timing gearset gears are large and have wide faces and are helically cut.

The engine is cooled by a circulation of water forced through the cylinder jacket and a large vertical tube cooling sectioned radiator, having cast top and bottom tanks, by a centrifugal pump. The tubes may be easily repaired and they can be plugged so the machine may be used in the event they are damaged. This insures against loss of vehicle service. The radiation is supplemented by fan circulation of air.

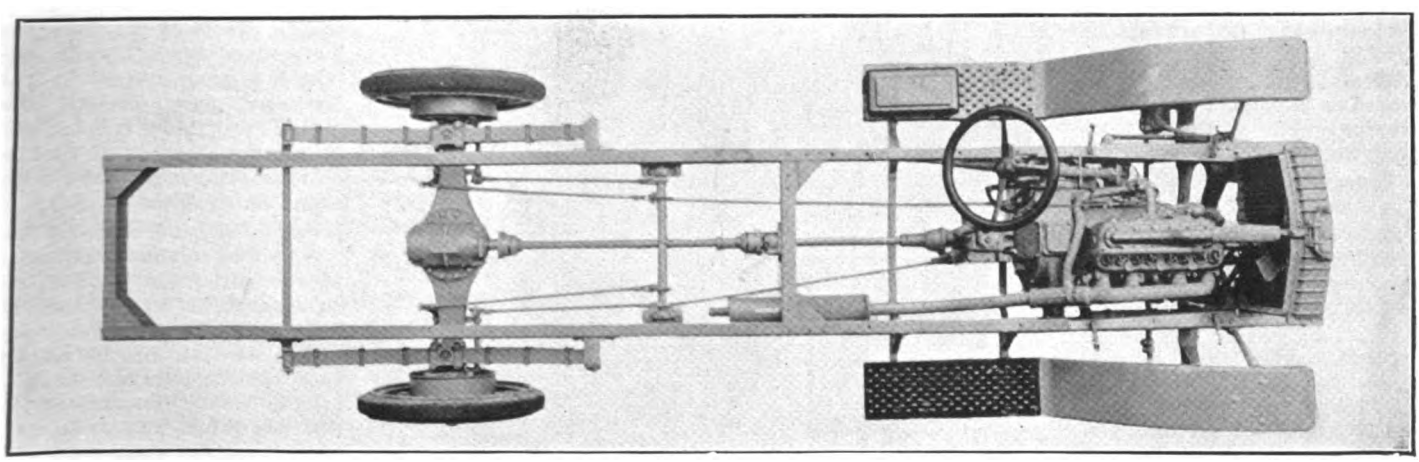
The fuel is supplied by a Stromberg carburetor with a stove to promote vaporization and the source of ignition is an Eisemann high-tension waterproof magneto with fixed spark.

The clutch and transmission gearset are combined with the engine in a unit power plant, both being Brown-Lipe construction. The clutch is a multiple disc type, adjustable with four lock screws. The selective sliding gear transmission gearset has three forward speed ratios and reverse.

The Spicer two-section driving shaft is tubular, fitted with three universal joints, the rear end of the forward section being supported by an SKF self-aligning ball bearing on a frame cross member. The chassis is fitted with Timken axles, the rear axle being a semi-floating worm shaft and worm wheel construction and the front axle is a drop forged I section. Both are fitted with Timken roller bearings.

The frame is pressed steel, channel section, five inches wide with broad webs, and is suspended on long Perfection semi-elliptic springs. The steering column is at the left side and the control is conventional. The brakes are both internal expanding within drums 15 inches diameter and three inches wide on the rear wheels. The brake shafts are steel bars and tubular shafts with swiveled bronze bushings mounted in brackets on the frame side members, insuring perfect alignment, and the levers are keyed and clamped to the shafts. The brake rods are half inch diameter with S. A. E clevises at either end.

The wheels are wood, artilery type, shod with 34 by 3½ inch tires forward and 34 by four inch tires rear. Pneumatic tires are fitted at extra cost. The wheelbase is 134 inches. The chassis is sold with driver's seat, lazy back, front fenders, running boards, oil dash and tail lamps, tool box, horn, jack and tool kits, f. o. b. Detroit for $1900. The chassis will be equipped with any type body or cab practical for this capacity machine at the factory when desired by the purchaser.



Plan View of the Standard Model 56 One-Ton Truck Chassis, Showing the Unit Power Plant, the Transmission System and the General Frame Construction.

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ZENITH NON-ADJUSTABLE CARBURETORS

ENGINE fuel and lubricant cost combined are one of the largest items of power vehicle operating expense. Not only is the price of gasoline at the highest average paid, but the quality of the fuel is lower because of heavier oils remaining after refining. Though the cost is more the power obtained is less because of reduced combustibility.

The consumption of fuel depends largely upon the character of the carburetion, and primarily upon adjustment. There are many variables that necessarily influence the production of power from a given fuel. These include temperature, humidity, the proportions of air, the ignition, compression, lubrication and the condition of the engine.

The volume of fuel depends upon the judgment of the adjuster of the carburetor, and there is supposition that when this has been determined by engine operation that the variations of air can be obtained. Were one quality of fuel always obtainable the theoretical result would be more easily obtainable. But with fuel that is more or less variable because of need of procuring it from various sources, with possibilities of gradual decrease of engine efficiency and wide variations of temperature much gasoline is needlessly used because of belief that the carburetor should be adjusted.

For this reason the carburetor that is non-adjustable, aside from the volume of air, is regarded as best adapted for the engines of power vehicles, for comparatively few owners or drivers have sufficient knowledge to obtain what may be stated as maximum power production with minimum consumption.

Broad claims are made for the efficiency of Zenith carburetors, which are a non-adjustable type, and which, the manufacturer maintains, when correctly installed on engines, need be given no further attention. The statement is made that it affords absolutely automatic carburetion. This is based upon the fact that the three elements that control carburetion, the choke tube, the main jet, the compensator and idling tubes, when once set need not as a rule be changed. When once the relation of each to the other has been established for a specific engine, and this is usually done at the factory, there can be no variation.

The Zenith carburetor is constructed with what is known as a compound nozzle. Primarily carburetion consists of injecting a spray of gasoline into a current of air to impregnate the air to such a degree that it will be combustible when it is compressed in the engine cylinder and ignited by an electric spark. The better the mixture, that is, the nearer to the proportions of air and gasoline that will be consumed instantaneously and with the least residuum, the greater the power, and the power, as evidenced by the operation of the engine, is the basis of determination.

Carburetor development obviously cannot be reviewed in the space devoted to this statement, but from what has been stated one can understand that the carburetor must project a predetermined volume of fuel into the air drawn through the instrument by the suction of the cylinders of the engine, and the suction is in ratio to the engine speed.

The action of the compensating nozzle or jet of the Zenith carburetor is best shown by several simple diagrams, the first of which shows a single jet from the float chamber projecting into the center of a constricted tube through which the air is drawn by the piston movement. In this, which is indicated as Fig. 1, the fuel is drawn from the float chamber F through the tube E into the air current at the nozzle G. The flow of gasoline under suction will increase faster than the flow of air, so that either the volume of fuel or the volume of air must be varied to maintain the proportions of both that will be most combustible.

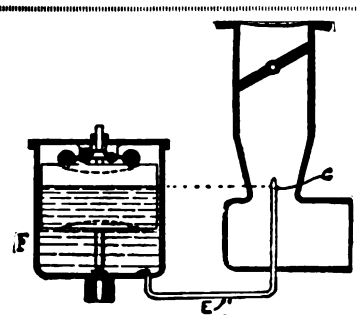


Fig. 1.

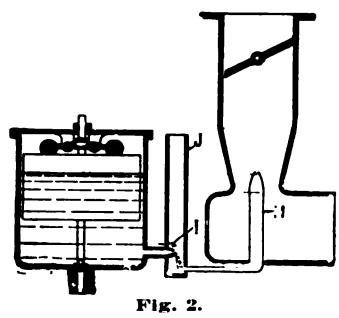


Fig. 2.

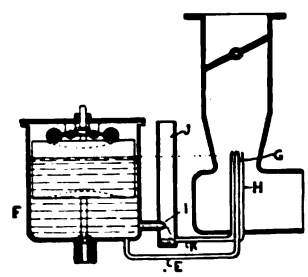


Fig. 3.

The Zenith carburetor was designed to regulate the flow of fuel instead of the air, and this is illustrated at Fig. 2. This shows the tube or well J, which is interposed between the outlet I of the float chamber and the nozzle H. The gasoline will flow from the outlet into the tube, and will fill J and H to the same level. As J is open to the atmosphere the suction at H does not influence the flow through I, and the volume of gasoline is decreased as the speed of the engine is increased.

The combination of the two nozzles which produce respectively rich and poor mixtures is shown in Fig. 3, which represents the principle of Zenith design. In this the fuel is drawn from the float chamber F through the tube E to the nozzle G and from the outlet I to the well J and the tube K to the nozzle H, so that the increase of flow through the tube E is compensated by the decreased flow through the tube K, and there is practically a uniform supply of fuel at all times drawn from the compound nozzle G.

One will understand that this applies to the functioning of the carburetor at all engine speeds, but in addition the Zenith carburetor is equipped with a starting and idling device, which terminates in a priming hole at the edge of the butterfly valve, where the suction is greatest when the valve is slightly opened. This is illustrated at Fig 4 The fuel is

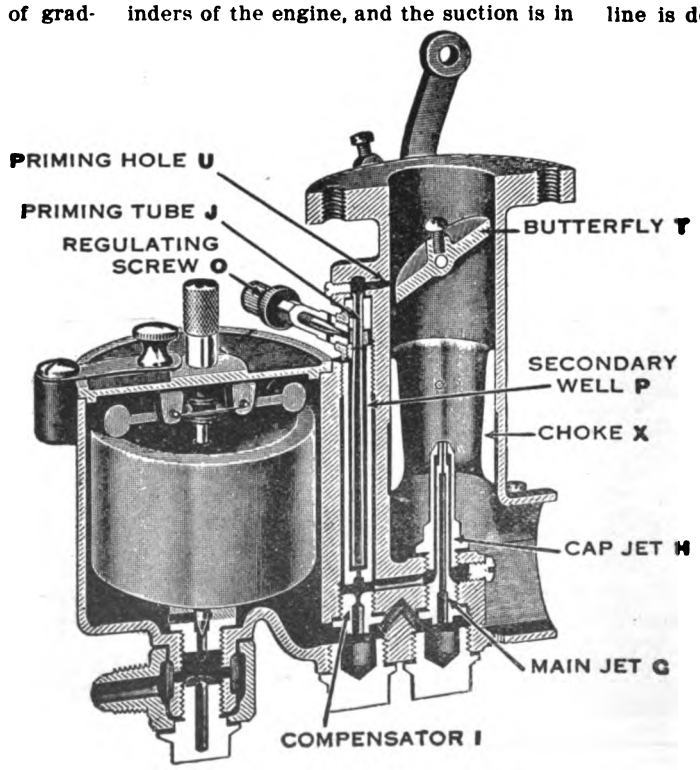


Fig. 4—Cross Section Showing Principles of Zenith Carburetor Construction.

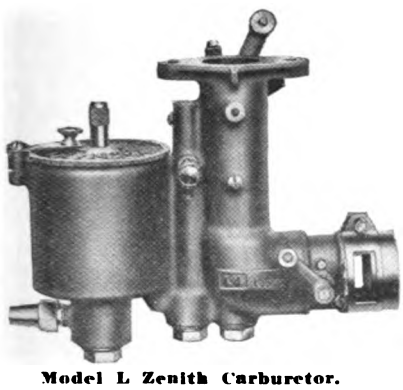
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drawn by suction through the priming hole U from the priming tube J and mixed with air passing the butterfly valve. But as the speed is increased and the butterfly valve is opened the idling device ceases to function because the gasoline from the compensator I flows to the cap jet G.

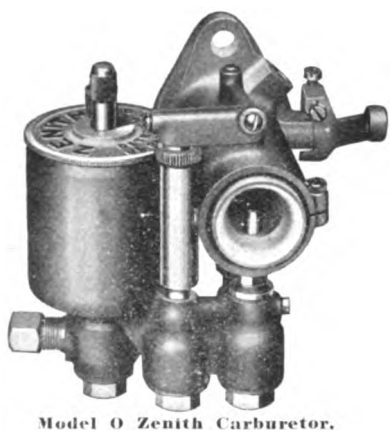
The three variables which determine the quality of the mixture supplied by a Zenith carburetor are the choke tube, the main jet and the compensator. The size numbers of these parts are stamped on the ends, and the chokes are stamped in millimeters, indicating the smallest internal diameter, and the jets and compensators are numbered in hundredths of a millimeter and are sized in five hundredths of a millimeter. As these values are determined before the carburetor is passed there is little probability that there will be need of change.

In any event the only condition that could exist would be that these parts were too large or too small, and with the idling device air leaks from poor gaskets, loose valve stems, pitted valves or leaky valve caps, leaky plugs or priming, spark plug electrodes too closely set, light flywheel, too great spark advance or retard, might cause defective action. If the device is too small the best mixture would be with the adjusting screw seated, if too large the best mixture would be with the adjusting screw backed out to the limit. In either case a larger or smaller device would be the practical change, provided that the condition of the engine has been restored to normal. The variations of the idling device have no influence on the engine at higher speeds.

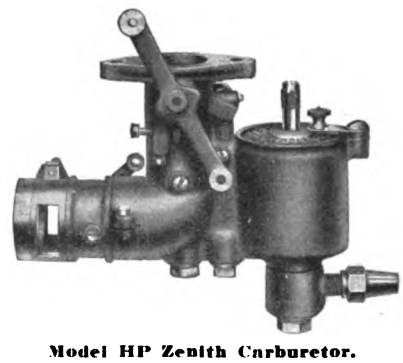
During the war Zenith carburetors were developed for eight and 12-cylinder Liberty engines, but produced in quantity for the 12-cylinder engines, these being a duplex type, with two carbureting chambers, supplied from common air and fuel sources, two carburetors being used for each engine. These are a non-adjustable type, but with the exception of the altitude adjustment, which was incorporated to save fuel, the carburetors were the same as the Zenith commercial instruments. These were produced in numbers in excess of the requirements of the engine builders up to the signing of the armistice with Germany. Claim is made that the utility and efficiency of Liberty engines was due in no small part to the practicality and reliability of Zenith carburetors for such service.



Model L Zenith Carburetor.



Model O Zenith Carburetor.



Model HP Zenith Carburetor.

BETHLEHEM ABSORBS NORTH AMERICAN.

The surprising growth of the Bethlehem Motors Corporation, Allentown, Pa., has been one of the most notable features of the past business year in the automotive industry. The latest announcement is the absorption of the North American Motors Co. of Pottstown.

Roy S. Davey, general sales manager of the corporation, recently added to its sales force 31 field men, who cover the entire United States in 26 territorial divisions. This energetic sales campaign is resulting in an enormous increase in the business of the company, and necessitates an output of trucks which is taxing the capacity of the enormous plant.

NEVILLE BECOMES SALES MANAGER.

President C. C. Hinkley of the Hinkley Motors Corporation, Detroit, announces the appointment of Charles A. Neville as sales manager.

Mr. Neville joined the staff of the Hinkley company soon after its organization and his promotion is the outcome of successful result producing effort in the sales department of which he now becomes the head.

Mr. Neville assumed his new duties Oct. 1.

GASKET SALES INCREASING.

Another record breaking month's business by the gasket division of the McCord Manufacturing Co. is announced by C. B. Bailey, general manager of the Wyandotte plant. The shipments for September exceeded those for August, the best previous month, by over 28 per cent. Orders for current and future delivery continue to pour in and it is assured that the factory will be working at top speed throughout the winter.

The management is fortunate in having sufficient raw material on hand and in transit to take care of its manufacturing demands for months to come.

Manager Bailey also announces the appointment of Malcolm McCormick to take charge of sales and advertising. Mr. McCormick was for a number of years associated with the Burroughs Adding Machine and Chalmers Motor companies.

SEPTEMBER RUSSEL MAGAZINE.

Editor A. C. Chambers has filled the Russel Magazine for September full of pertinent facts concerning the Russel axle, made by the Russel Motor Axle Co., Detroit, Mich., and presents the matter in an entertaining vein. His motto for this issue is "A stock of smiles does not require an investment, yet it always pays a big profit."

TEST OF COLUMBIA TRUCK.

A test of the new model G 2½-ton Columbia truck, just completed by O. L. Wright, district sales manager of the Columbia Motor Truck and Trailer Co., Pontiac, Mich., is of especial interest. This truck was equipped with the new Hinkley Liberty motor and had an all-weather cab and farmer's special body with solid tires.

Mr. Wright drove from Pontiac to Baltimore, Md., a distance of 595 miles, averaging 12½ miles a gallon of gasoline. His actual running time was 41 hours, averaging over 14 miles an hour. This was a very satisfactory test of the new Hinkley motor, and shows what good mileage can be obtained through gas heated by means of a ram's horn hot spot manifold.

FOR SEPARATE REGISTRATION.

At the present time not more than 20 out of the states of the Union have separate registration for commercial and pleasure motor cars, and the National Automobile Chamber of Commerce is to start a campaign to have the registration of the two types of vehicles distinguished. Such an arrangement will be of value to the industry in the way of statistical information, etc.

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FIGHT BATTLE WITH STOLEN TRUCKS

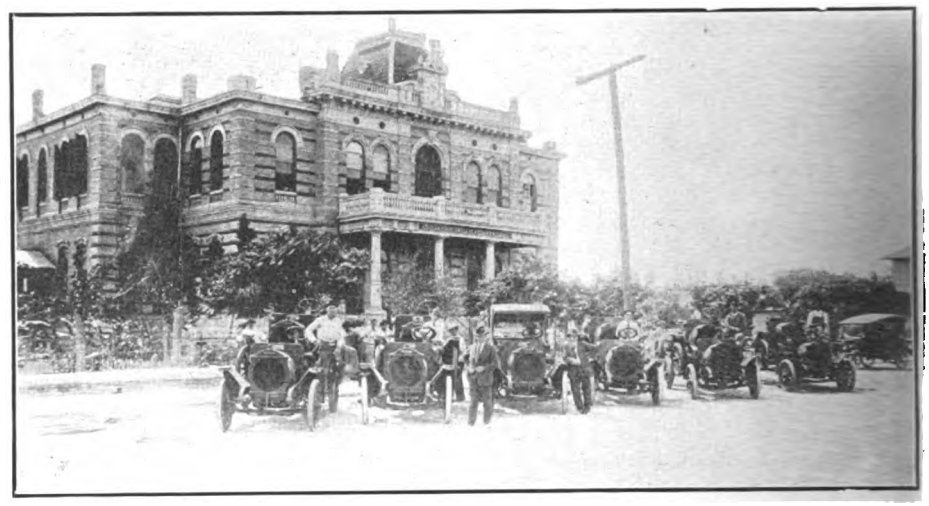
The Mexican border was recently the scene of the unusual spectacle of trucks of the same make being employed in warfare on opposite sides. When A. L. Jones, Texas supervisor for the Fulton Motor Truck Co. delivered a fleet of trucks to the representatives of the Mexican government at Piedras Nagras, opposite Eagle Pass, little did he realize the trouble that particular fleet was going into. Those Fulton trucks ultimately fought other Fulton trucks, all the vehicles being armed with machine guns.

The Mexican government sent out the fleet manned by Mexicans, both drivers and mechanics being trained by Mr. Jones and his assistants, who had driven the truck fleet 175 miles in record time from San Antonio to Eagle Pass for immediate service. The fleet was captured by Villa, four drivers were hanged, two were shot and two held as prisoners to train Villa men to operate the Fultons which took part in the attack of Juarez.

Mexico's government troops, left without their trucks and machine guns, appealed to Mr. Jones, who hurried by train to El Paso, where he secured the delivery of another fleet of Fultons from his distributor there. Driving these at top speed down the Rio Grande valley to Eagle Pass, delivery was made to the Mexicans on their side. The trucks were provided with machine guns and sent out after the brigands of Villa and the captured trucks. When the United States troops interfered in the scrap, as the contestants were firing across the line, Villa and his men fled, abandoning the stolen trucks after a battle with the second fleet.

The combined truck forces then crossed the border into the United States and Mr. Jones delivered back to the El Paso distributor the trucks he had commandeered so summarily. The Mexican trucks were then driven down the American side of the border and returned to the Mexican side without trouble.

Mr. Jones is said to have done more business in the truck field with the Mexican government than any other man; his sales have amounted to more than threescore to the government and almost as many more to Mexican merchants. With one order he equipped a fleet of eight trucks with two bodies for each unit in four days and delivered this fleet with capacity loads over 175 miles of typical border roads in less than a day.



Fleet of Fulton Two-Ton Trucks Delivered at the Custom House, Piedras Negras, Mexico, for Mexican Government, to Be Used in a Campaign Against Villaristas.

DEARBORN SALES FORCE.

The increase in the business of the Dearborn Truck Co., 2015-17 South Dearborn avenue, Chicago, since the announcement of its two-ton worm driven model BW truck, has made it necessary to make a redistribution of the country territorially for convenience in handling sales. George F. Bailey, general manager of the Dearborn company, has assumed the management of active sales and the following personnel of that department has been announced:

C. O. Nerad, who since his return from service overseas has been service manager for the company, has been appointed sales manager of all the territory west of the Mississippi river; L. W. Coulson, advertising manager, has been appointed sales manager of the territory east of the Mississippi river; Charles E. Salter, for a long time connected with the Dearborn company, becomes export manager; R. J. Macdonald, formerly head of the Macdonald Motor Co. of Atlanta, Ga., becomes southern sales representative. Mr. Bailey has relinquished his duties as purchasing agent, and is succeeded in that capacity by C. B. Blair.

Points of superiority claimed for the Dearborn model BW two-ton truck are that it weighs from 500 to 2000 pounds less than any other two-ton worm driven truck, and that its operating cost is much lower because of its simplicity of construction and its efficient, standardized units, which gives more mileage from gasoline, oil and tires.

It is equipped with the following standard parts: Buda truck motor, Stromberg carburetor, Stewart vacuum system, Borg & Beck clutch, Grant-Lees transmission, Standard worm axle and Torbensen front axle.

ACME TO DOUBLE CAPACITY.

The Acme Motor Truck Co., Cadillac, Mich., has begun the construction of the first of the four new units made necessary by the ever increasing volume of business. This addition will be 65 by 144 feet and when the other three units are completed will double the present capacity of the Acme works.

The company will also double the capacity of its body building department, as the present production is inadequate to keep up with the demand. The construction of these new units will be of pressed brick, uniform in appearance with the other buildings.

DOMVILLE JOINS ACE.

C. H. Domville, formerly with the Diamand T Motor Car Co., has joined the American Motor Truck Co., Newark, O., as divisional sales manager for Ace motor trucks made by that company. Mr. Domville will have headquarters at Chicago and will cover the central western territory.

MASTER'S SALES DEPARTMTNT.

On account of increase of business during last few months the Master Truck Sales Co., which handles retail sales for Master Trucks, Inc., Chicago, has been forced to abandon its headquarters at the factory, and has secured larger quarters for a salesroom and service station at 1638 Wabash avenue. The Master company has associated with itself, for the distribution of Master trucks in Chicago, northeastern Illinois and a part of Indiana, F. Weil as general manager; H. M. Weil, who saw service in the marine corps, and Harry Caplan, sales manager.

Mr. Caplan was at one time eastern manager for the Mitchell Motors Co., and later with the Philadelphia financial house of Owen Finney Co. He recently returned from overseas duty, having been a member of the first group of engineers to go across.

MUST HAVE RUBBER TIRES.

According to an ordinance passed by the city commission council of New Orleans, truck owners have 90 days in which to change all their steel tires over to rubber. Draymen who protested against the rule, when it was first proposed some three months ago, have complied with the ordinance. but now the lumber men enter complaint, claiming that it will cost them thousands of dollars to equip their motor trucks and trailers with rubber tires.

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TRUCK TIRE SERVICE AS A BUSINESS

Station with Practical Equipment and Good Management Developed to Be the Largest in New England in Less Than Three Years.

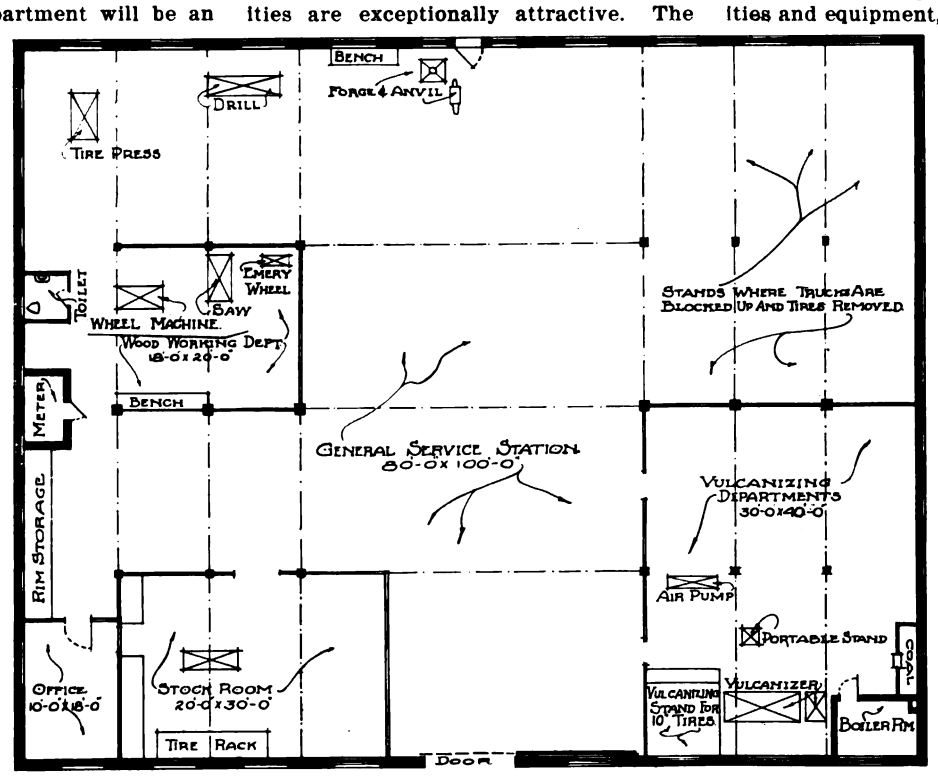


Drivers and Owners at the "Conservation Day" Gathering at Feltham's Truck Tire Service Station, an Event Planned to Advise Them of Practical Tire Economies.

TIRE service keenly concerns every owner of power trucks. The time of a truck has distinct value and any period that is not productive results in a loss that cannot be compensated. The owner may, provided that the number of machines shall justify, provide for tire changes and repairing, but this will necessitate initial investment for shop equipment and tires, the use of capital and the employment of men, and unless the fleet is of such proportions that the employees shall be constantly working a tire maintenance department will be an extravagance and not an economy.

The tire service station must, as does the mechanical service station, specialize this work. There are thousands of tire repairers, many of them operating in a small way and handling passenger car tires solely. Some of the repair men have expert knowledge, having had factory experience and frequently thorough training. The number of truck tire service stations is comparatively few, however, due first to the fact that with very limited equipment a shop for car pneumatic tire repairs can be established; second, that cars vastly outnumber trucks and the possibilities for business are believed to be greater; third, that the repairing that can be done with solid tires is not of a character that earns considerable revenue, and fourth, the equipment necessary for a truck tire service station is costly and considerable initial investment is necessary.

There is every reason to believe, however, that from now on the tire station that is equipped to afford tire service for trucks will have a very satisfactory and remunerative business, and the possibilities are exceptionally attractive. The number of trucks in use is increasing very fast and though there is no probability they will be as numerous as passenger cars, the character of service is entirely different and ought to be very profitable.



Floor Plan of Feltham's Truck Tire Service Station, Showing the Arrangement of the Different Stock and Work Departments.

An Exclusive Truck Tire Service.

This story has to do with the establishment and development of a tire station that was until recently given over exclusively to truck service. It has in 2½ years become the largest station of the kind in New England in point of facilities and equipment, and has become very profitable. Because of the increasing use of pneumatic tires for trucks of small size it now affords service shoes of this type for passenger cars as well, and does all kinds of repairing and restoration.

But its business is first of all with truck tires. There is no doubt of the growth of patronage and it is enduring because of the satisfaction that it insured to its patrons. The station was established by a truck tire salesman, who was attached to the Providence, R. I., branch of the Goodyear Tire & Rubber Co. for five years and in 1913 he won a gold medal offered by the company as a 100 per cent. efficiency man. He re-

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signed Oct. 31, 1916, and the following morning established his present business, beginning with desk room in the sales rooms of the Federal Motor Truck Co. of Rhode Island, and April 1, 1917, he leased the station he now operates at 76 Branch avenue, Providence.

Building of Large Area.

The building is brick, a single story, 80 by 100 feet, mill construction, and was originally built for mill storage. It has a yard of 16,000 square feet that is available for expansion or outside storage. The building is high studded and well lighted, with an entrance at the center of the front, which is advantageous for the layout of the several departments of the station. Reference to the accompanying plan of the floor of the building as it is utilized is interesting.

The location is well removed from the business center of Providence and Mr. Feltham was advised that the location would militate against business development, and especially against transient patronage, but the building is not too large for his requirements. One object was to have sufficient floor area so that the trucks could be worked on sheltered instead of in the open air, and convenient to the several departments to minimize labor and time, and there is little doubt that the size of the building has been an economy in more than one way, especially in cold weather.

Arrangement of the Departments.

Entering the structure at the left is the tire stock room, which is separated by half partitions with a sliding wire grating door, which is 20 by 30 feet, and beyond this in the corner is the office, 10 by 18 feet. Next beyond the office is the rim storage racks and bench, the meter room, the lavatory, and in the further corner at the left is the tire press. Arranged along the rear wall, extending about half the length of the floor, is the drill press, bench, forge and anvil. In the center of this section of the floor is the wood working department, which is 18 by 20 feet and is equipped with a wheel machine, band saw and grinder.

At the right of the entrance is the vulcanizing room, 30 by 40 feet, and beyond this are the stands for trucks that are in the station for work, and further on is the storage space for tires and rims removed from trucks and which will be sold for "scrap." The center of the floor is open and clear of posts and this is utilized moving trucks in and out and occasionally for work if the truck stand is filled.

This space is 37 by 70 feet and a part of this and the area now used for old tire storage could be devoted to additional equipment if this is needed with the development of the business.

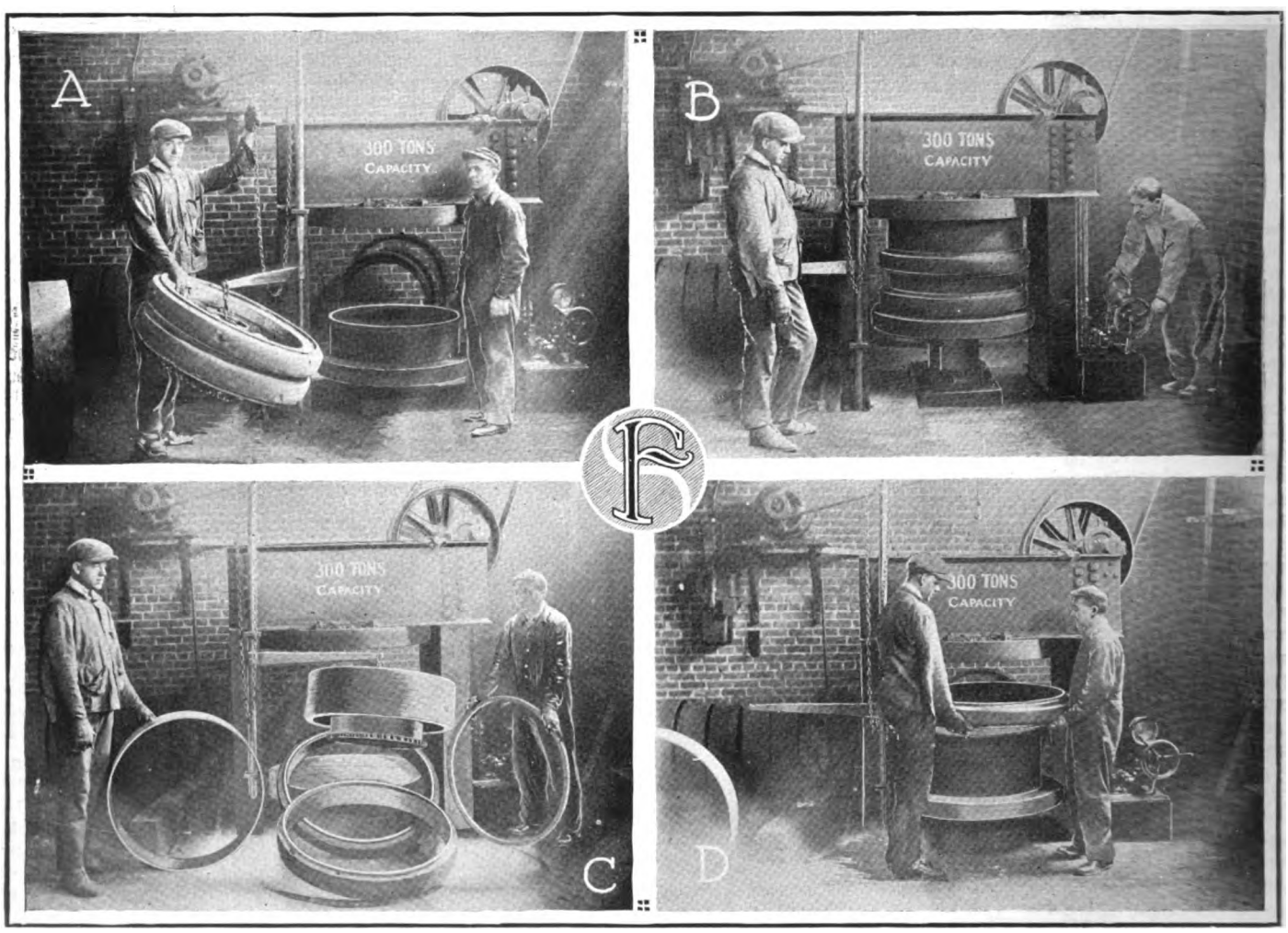
Large Stock of All Tires.

In the stock room is a show case in which is displayed tire accessories. On two sides of the room are racks in which are kept all sizes of truck and passenger car tires. In truck tires, solid bands, the range is from 32 by 3½ inches to 41 by 12 inches; in cushion truck tires from 30 by four inches to 36 by five inches; in cord truck pneumatic tires from 36 by six inches to 42 by nine inches; in passenger car pneumatic tires, both cord and fabric, from 30 by three inches to 37 by five inches, and in industrial truck solid band tires from 10 by three to 20 by five inches. All the tires are Goodyear products and the stock will range in value from $25,000 to $30,000.

So far as is possible all sizes of tires and pneumatic tubes are stocked, so that practically any requirement can be met.

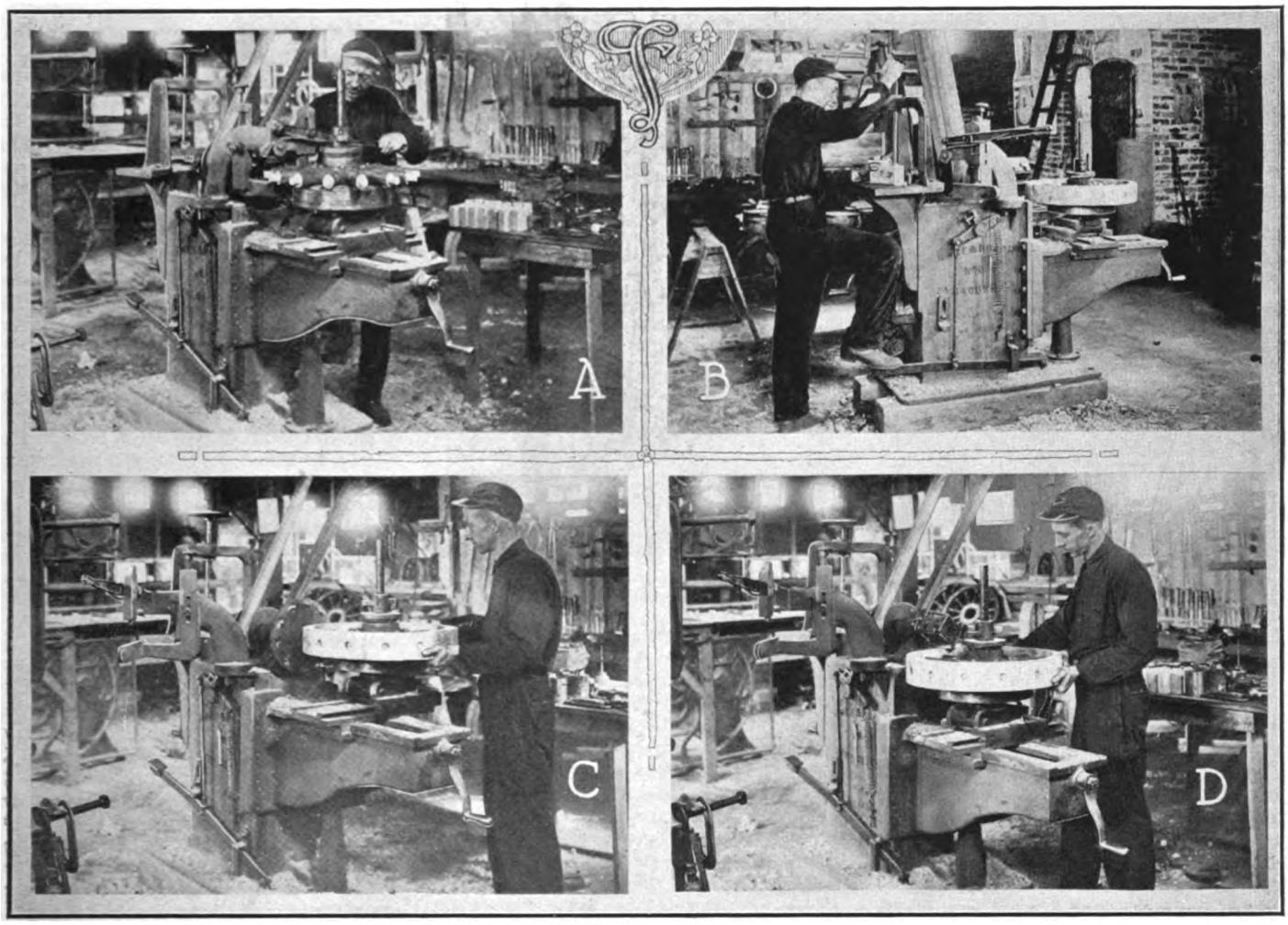
The station is also stocked with all sizes of S. A. E. bands, so-called, these being the steel rims that are pressed on the felloes of all wheels on which demountable pneumatic tires are mounted, quick detachable and demountable rims for passenger car wheels, wheel flanges for cushion tires and rims for truck pneumatic tires.

The shop equipment of the station is exceedingly complete and was determined with a thorough knowledge of the requirements for the work. None of the machines is duplicated, but the system is such that the work is progressively



Removing and Replacing Tires: A, Wheel with 40 by 10-Inch Dual Bands Hoisted to Swing on to the Press Table; B, One Band Clear and the Other Being Forced Off the Rim; C, Wheel with Tires Removed in Readiness for Installation; D, Wheel on Press and Setting New Tire for Pressing On.

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Rebuilding a Wheel for Pneumatic Tire Installation on a Rouch & Kane Multiple Operation Machine: A, Cutting the Spokes and Making the Tenons; B, Boring the Felloe Blocks; C, Dressing the Face of the Rim; D, Dressing the Edges of the Rim.

done and no delays are experienced after the start has been made.

Long Truck Tire Experience.

Mr. Fletham's experience has been largely with truck tires. Prior to connection with the Goodyear company he was in charge of the stock room of one of the largest passenger car service stations in Rhode Island, and when he went to the Goodyear branch he found that there was a disposition of the salesmen to devote themselves to passenger car tires because truck tires did not seemingly give the same degree of satisfaction to the buyers.

At that time practically all the truck tires were constructed with fabric bases, and these were pressed on to wheels that were fitted with steel felloe bands. The tires could not be held securely on these bands unless "frozen" by rusting, and many of them loosened quickly after installation and replacement was necessary. Frequently the tires were shed and trucks were delayed until replacement was made.

First Hand Knowledge of Service.

Mr. Feltham believed that with the increase of trucks and the perfection of tires the really big business for tire salesmen would be with truck owners and he undertook to develop the custom of users of trucks. There was but one tire press in Rhode Island, and that was small and manually operated. He found the owners wanted to have tire work done when the trucks were idle and to meet this requirement he sold tires during the business days of the week and worked evenings, Saturday afternoons and Sundays installing the tires he had sold. There were emergency requirements to be sure, but he and other tire salesmen learned very much to their inconvenience that a great deal of their business depended upon their willingness to place their spare time at disposal of their customers. The experience gained by this enforced labor later proved to be very valuable, although the work was regarded as a hardship at the time.

When the change in construction of truck tires, from fabric to steel bases, was made, the first power press was set up at the Goodyear branch, and the owners could be assured of better tires and a much improved service. The number of trucks in use was then such that the work necessary on them could not be done at week ends and there was need of better systematizing it so far as meeting the needs of the owners was concerned.

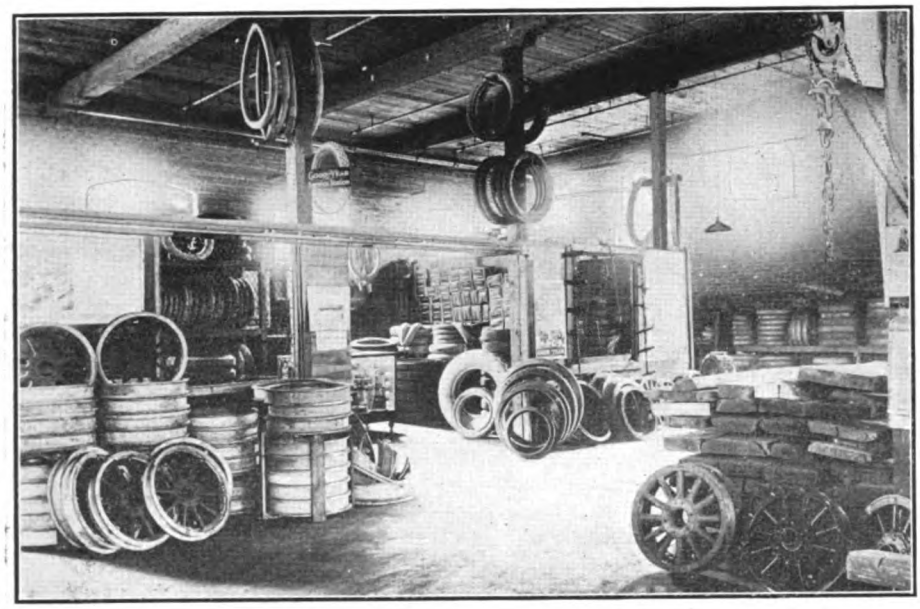
Mr. Feltham's activities in time became almost exclusively with the truck department and it was knowledge of the needs and the existing facilities for truck owners with reference to tire service that impelled him to engage in business.

Station Equipped for General Work.

The equipment of the station was determined to cover the entire range of work that might be obtained. The tire press is a McCall, having capacity of 300 tons pressure, which is more than sufficient to remove or install the largest tires, 42 by seven inches dual being the maximum that has been worked on with this press. The initial cost was greater than that of a smaller press, but there has been no occasion for duplication of press work, which would often happen with a machine of lesser capacity. Instead of using water in the pumpage system of the press the best hydraulic oil was obtained, and besides insuring against deterioration by rust, and against freezing, the thorough lubrication minimized the consumption of electric power, three important factors in press operation and maintenance.

The station service was planned to include wood wheel maintenance, and a shop was equipped with a No. 6 Kane & Roach wheel machine, a band saw and a combination grinder and buffer. The wheel machine was necessary from the fact that wheels subjected to climatic changes shrink and swell and under load and tractive and braking stresses are frequently loose and may, when examined upon removal from a vehicle, require more or less restoration. Or the wheels may be so deteriorated that replacement is necessary. Or the owner may wish to change from solid to pneumatic tires, in which event the diameter of the wheel is reduced by shortening the spokes and

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Tire Stock Room and the Steel Rim and Band Department and a Corner of the Lumber Store of the Station, from the Center of the Main Floor.

fitting a new rim, and an S. A. E. band or felloe rim installed.

Economy of Combination Machines.

This wheel work must be finished and equal to the original construction, and possibly must restore defects that have developed in service from inferior quality of material or faulty workmanship. The material used in the wheel work must be highest grade and thoroughly dried. The combination machine is decidedly the best for a shop of this kind, where the operations are not continuous, for changes for any one work can be made with practically no loss of time, the cost is low as compared with that of a number of single work machines and comparatively little space is required, yet the shop has what is equal to the facilities of a factory. Necessarily the workers must be highly skilled.

This machine will do any work for a wheel up to 42 inches and it will take a rim 13 inches wide and seven inches thick, which is the largest size that has yet been found practical for trucks. The machine will saw spokes and cut them to length, cut spoke tenons, bore felloe block, dress fellow faces and rims, all of these to scale and pointer settings that insure accuracy. In addition to this the shop has a band saw and a combination buffer and grinder. The other general tools include a drill press, which is serviceable in innumerable works, and a forge and anvil, where fittings of any kind can be made or adapted where there is need of change, and general forge welding of metals done in the event of breakage or other need.

Vulcanizing Shop Equipment.

The vulcanizing shop is exceedingly complete, its equipment including both steam and electric vulcanizing machines. The steam units are Akron-Williams, and these are two in number, the first having capacity for pneumatic tires from three to five inches cross section, and the second a model R having capacity for pneumatic tires from six to nine inches inclusive cross section. The largest pneumatic tires built for trucks are 48 by 12 inches, but these are so rarely used that no provision has as yet been made for sizes larger than those specified.

The electric vulcanizing machine, which has just been installed, can be utilized for any type of pneumatic tire, no matter what the wheel or cross section diameter. Electric vulcanizing is a process very recently developed, which is claimed to afford better results than with steam. It is especially recommended for retreading tires. Statement is made that where the fabric or cord of a tire is not damaged it can be retreaded, no matter what the condition of wear, and that the life after repairing will compare very favorably with that of the original tires.

Quality of Electric Vulcanizing.

With reference to this process, it differs with steam vulcanizing in that a tread that is fully "cured" is vulcanized to the tire casing, and that this does not subject the remainder of the tire section or the tire, which was originally fully cured when made, to another period of extreme heat. Claim is made that when a rubber compound is once cured, as in the manufacture of a tire, a second heating to a curing or vulcanizing temperature will affect its wearing qualities. The second heating to an excessive temperature, such as causes the rubber to become plastic or semi-fluid, is obviated, for the application of the electric heat is between the tread and the tire carcass, and on but a small area of the tire. Not only this, the temperature can be very finely regulated.

With reference to the use of electric vulcanizing, this process has the approval of the largest manufacturers of tires, and there is reason to believe that it will be found superior for truck tires, which are subjected to heavier loads and consequently the endurance must be maintained at the highest point possible when repairs are made.

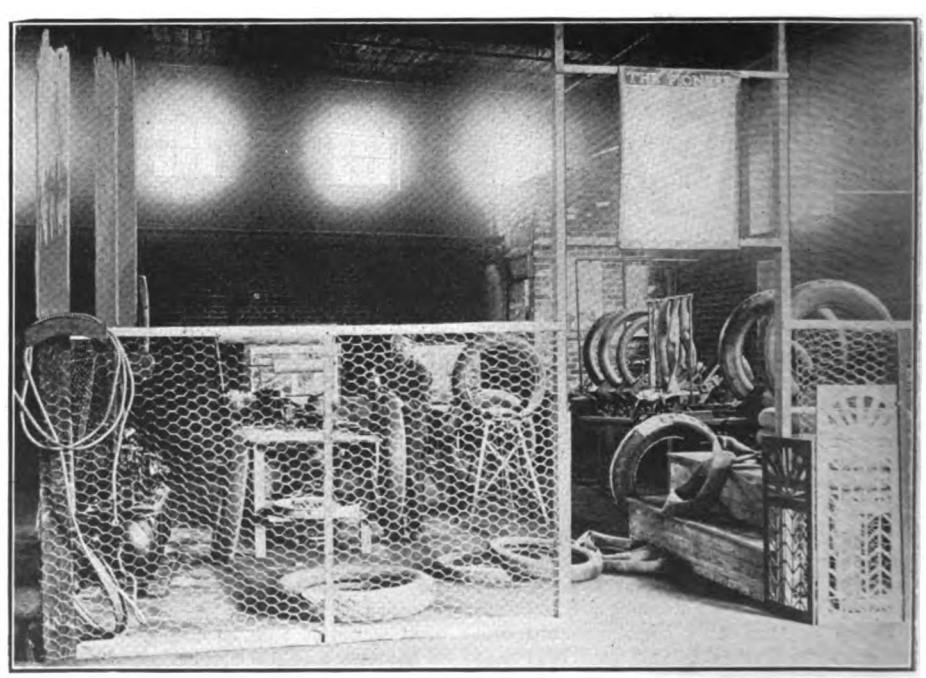
Business Established by Hard Work.

The business was not established without hard work and it was in a sense a repetition of the experience with the Goodyear branch in that the business hours of the day were devoted to selling and the tires sold were installed evenings, Saturday afternoons and Sundays, Mr. Feltham doing all of the work he could.

The owners of trucks were first impressed that the object was to afford service that would first of all insure them getting high grade tires, that these tires would be installed to best meet their requirements, and there would be no lost time of the trucks unless through conditions that could not be anticipated.

Salesmanship, according to Mr. Feltham's standard, is not selling truck owners what they think will best serve him, but what the salesman knows will be the most economical when every factor is considered. The buyers are advised of

(Continued on Page 467.)



Part of the Vulcanizing Department, Which Is 40 by 30 Feet, and Equipped for Steam and Electric Repairing Tires Up to Nine Inches Cross Section.

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NEW GARFORD 3½-TON TRUCK

A SECOND type of 3½-ton truck chassis is now being built by the Garford Motor Truck Co., Lima, O., which is intended to meet the requirements of those who desire long wheelbase chassis. This machine differs with the 3½-ton unit built for a considerable period in that the engine is placed forward of the driver's seat instead of under it. The object in the older design was to obtain full body length with short wheelbase, which is very desirable where the working area is limited. To meet the demand of those who prefer the conventional design this new chassis has been produced. Both chassis will be built in whatever numbers are sought by buyers.

In design the chassis is claimed to have every quality that long manufacturing and engineering experience can suggest and it has been extremely simplified and made thoroughly accessible, although all moving parts are well lubricated and so far as possible enclosed. The factors of safety are extremely large and the assembling has been with the object of obtaining great endurance.

The engine is a four-cylinder, four-cycle, water cooled, L head, vertical type. The cylinder bore is 4½ inches and the stroke six inches, and the rating by the S. A. E. formula is 32.20, but the power developed will considerably exceed this. The cylinders are cast en bloc from a special gray iron with the water jacket integral, and the head is a separate casting. The design is such that the water chambers can be made extremely uniform and perfectly cleared to insure freedom of circulation, this adding greatly to the efficiency of the cooling system. The water chambers are unusually large and the valves and combustion heads are completely surrounded with water.

Engine a Special Type.

The crankcase is cast in two sections, the upper carrying the crankshaft bearings and the lower section serving as an oil reservoir. There are forward extensions to house the timing gearset and the rear extensions enclose the flywheel and form part of the clutch case. The pistons are gray cast iron and are carefully turned and are fitted with three rings each. They are constructed so that a snap ring prevents any movement of the wristpin, and the wristpin set screw is a new design intended to insure against the possibility of scored cylinders. The piston length is 6¼ inches.

The crankshaft is a three-journal type, drop forged from a special steel and heat treated and ground to size. The journals are unusual length and the shaft is large diameter to prevent whipping. The camshaft is drop forged from a high grade alloy steel with the cams integral, and the cams are slightly offset from the valve tappets. The shaft is case hardened and accurately ground. The journals are large and the shaft is designed to be removed from the engine case without taking out the bearings. The connecting rods are heat treated steel drop forgings and are I section, the caps being retained by four bolts each.

The crankshaft main and connecting rod bearings are die-cast babbitt metal mounted in bronze shells and these are adjustable with shims. The camshaft bearings and the piston bushings are phosphor bronze. The timing gears are large diameter, the faces are 1½ inches wide, and they are cut helically to obtain noiseless operation.

The valves are at the right side of the engine block. They are the usual poppet type, and the valve tappets are a mushroom design that are retained by yokes that are readily removable should occasion require. The valve chamber is enclosed by a large cover plate retained by studs.

Cooling and Lubricating System.

The engine is lubricated by a force feed system, the lubricant being drawn from a well in the reservoir through a screened intake and forced through steel tube by a gear-type pump, which delivers it under pressure to all bearings and the overflow from the pressure relief valve supplies oil to the timing gearset. The oil distributed by the centrifugal movement of the crankshaft lubricates the cylinder and piston walls, the wristpin bearings, the cams and valve tappets. The excess oil drains to the reservoir from the bottom of the crankcase.

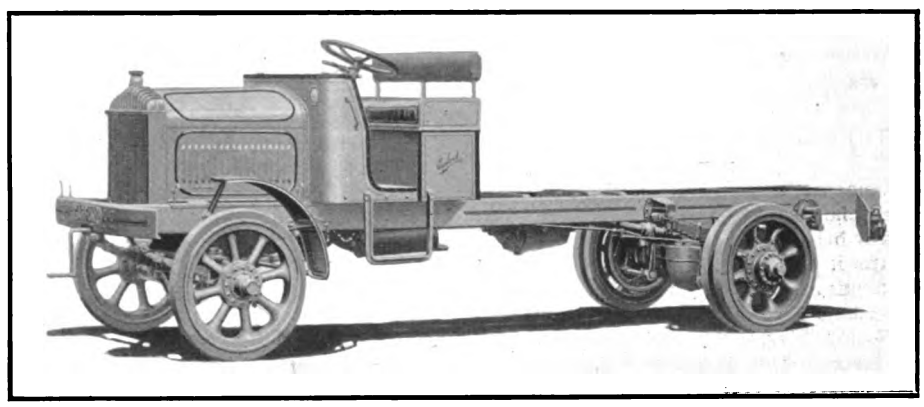
The engine is cooled by a circulation of water through the cylinder jacket and an extra large radiator, forced by a centrifugal pump. The radiator has a tubular cooling section and the top and bottom tanks are cast. The radiator can be quickly disassembled whenever necessary for cleaning or repair and a damaged tube may be removed or plugged so that the radiator may be used temporarily in the event that it cannot be immediately replaced when repair is needed. Radiation is promoted by a large fan mounted on an adjustable bracket on the forward end of the cylinder block that is driven by a flat belt from a pulley on the forward extension of the pump shaft.

The fuel is supplied through an automatic float feed plain tube carburetor that is claimed to be extremely efficient, and the source of the ignition current is a high-tension magneto. The engine is equipped with a high grade governor that limits the maximum speed to 14 miles an hour. The crankcase is constructed with flanges for mounting a generator and a motor when an electric lighting and starting system is required by the buyer.

Power Transmission System.

The clutch is the standard Garford multiple disc design, which is equipped with annular ball bearings, and has been found particularly efficient in service. The power is transmitted through the forward section of the driving shaft to the transmission gearset, which is mounted amidships, this being a selective sliding gear type having four forward speed ratios and reverse. All the shafts and gears of the gearset are made of heat treated alloy steel and the gears are unusually wide for the size of the chassis. The pitch of the gears is 5-7 and the gear reductions are first, 4.84:1; second, 2.82:1; third, 1.76:1, and fourth, direct. The transmission gearset and the housing are designed so that a power take-off can be installed if this is desired at slight additional cost.

The driving shaft sections are tubular, of very large section, and the universal joints are all steel and are contained in dust and oil tight housings.



The New Garford 3½-Ton Truck Chassis with Standard Equipment, This Having the Engine Under the Hood, but with the Distinctive Roman Dash.

The rear axle is a worm shaft and worm wheel full floating type, each wheel being supported on a tubular extension from the end of the axle housing. Each wheel is mounted on two bearings. The worm shaft and the worm wheel are mounted on the cover of the center bowl of the axle housing and is removable as a unit. The bearings of the axle are claimed to be considerably heavier than the axles of other trucks of the same capacity. The front axle is an I section drop forging, heat treated, with heavy drop forged alloy steel steering knuckles that are heat treated.

General Chassis Details.

The frame is constructed of pressed steel channel section, seven inches wide, with wide webs, and this is reinforced with heavy cross members and gusset plates. The frame is suspended on semi elliptic springs, the forward set being 42 inches long and three inches wide and the rear set 56 inches long and 3½ inches wide. The wheelbase is 132 inches and the wheels are steel, shod with 36 by five-inch tires, the rear set being dual. These tires are interchangeable.

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The steering gear is a screw and nut irreversible type, having a 22-inch notched rim hand wheel at the left side of the chassis. The drag link is a ball and socket type with compression springs at both ends of the rod to prevent rattle. The control is conventional and the brakes are both operative within drums 21 inches diameter by 3¾ inches width on the rear wheels. The brakes are exceptionally large for a chassis of this size.

The gasoline tank is 25 gallons capacity and is under the driver's seat. The chassis is sold with the usual equipment and a front bumper. The loading space with this chassis is 12 feet long.

REED JOINS ADVERTISING FIRM.

Charles G. Reed, who is well known in automotive literary circles all over the country, has joined the Dunlap-Ward Advertising Co., Cleveland, O. In this new connection Mr. Reed will be engaged in publicity and sales promotion work for a number of automobile and accessory firms who are the clients of the Dunlap-Ward organization. Mr. Reed was formerly automobile editor of the Detroit Journal and prior to that was motor editor of the Cleveland Leader. He has also been associated with the management of motor shows in Detroit and Cleveland.

TRUCKS IN MINING INDUSTRY.

Manufacturers of motor trucks or motors specially designed to handle coal or ores will be given an opportunity to demonstrate, in conjunction with the National Exposition of Mines and Mining and American Mining Congress to be held at St. Louis, Nov. 17-22, the utility of their products in this industry. This will afford a chance for ship-by-truck advocates to show how their theory may be worked out in relation to these activities.

NEW JACKSON CORPORATION.

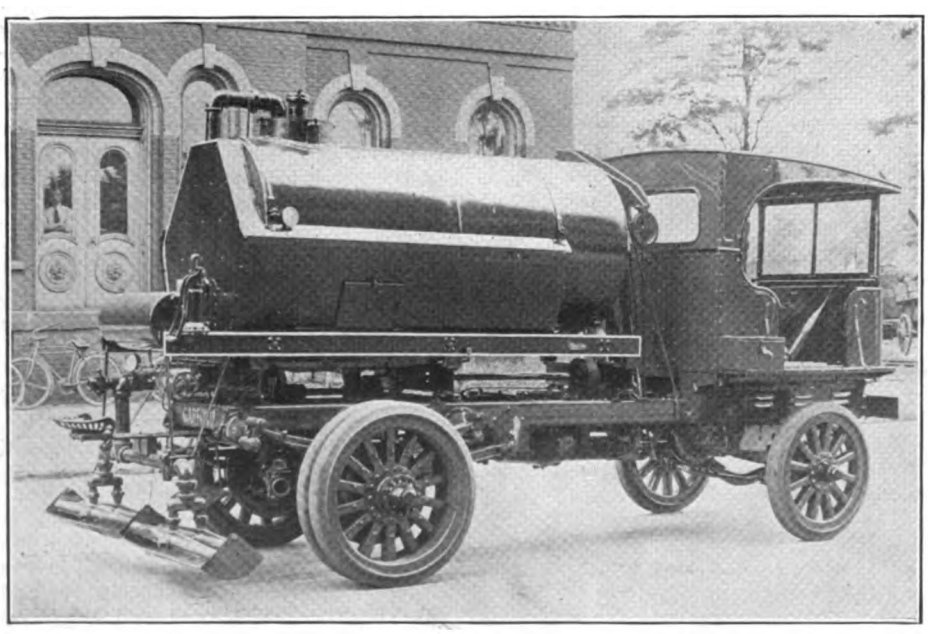
A new $5,000,000 corporation, known as the Jackson Motors Corporation, has been formed in Jackson, Mich., through the merger of the Jackson Motor and Manufacturing Co., the Jackson Automobile Co. and the Four Wheel Drive Truck Corporation of Chicago and Port Jefferson, Long Island, N. Y. The new corporation plans to produce, during the next 12 months, 4000 cars and 1200 four-wheel drive motor trucks of 3½-ton capacity. The concern will occupy the present plant of the Jackson Automobile Co. and will employ about 1000 men.

The directors of the Jackson Motors Corporation consist of the following: C. O. Minger, president and general manager, Electric Auto Light Corporation, and vice president Willys-Overland Co.; F. E. Mosher, secretary and general manager, Covert Gear Co.; G. W. Rogers, Goodyear Tire and Rubber Co.; Crispon Oglebay, president and general manager, Ferry Machine and Foundry Co.; H. A. Matthews, formerly president, Jackson Automobile Co.; W. W. Sterling, Boston; Carl L. V. Excelsen, Chicago, president and general manager, Portage Silica Products Co., Portage, Wis.; F. O. Evans, president and general manager, Evans Art Piano Co.; F. C. Matthews, former secretary and general superintendent, Jackson Automobile Co.

The officers are as follows: President, H. A. Matthews, Jackson; vice president, W. W. Sterling, Boston; secretary, Carl L. V. Excelsen, Chicago; treasurer, F. O. Evans, Chicago.

UNIVERSAL PURCHASES PLANT.

Delmar Gardens, St. Louis, Mo., have been purchased by the Universal Motor Truck and Tractor Engine Co., a corporation composed of business men of that city. The Timberlake four-wheel drive motor truck will be built in the new location.



Garford Truck Equipped with a Power Oiling Outfit, Utilized by the Memphis, Tenn., Street Department.

NEW FIRMS JOIN MOTOR AND ACCESSORY ASSOCIATION.

At a recent meeting of the board of directors of the Motor and Accessory Manufacturers' Association at the New York office, the following companies were elected to membership:

American Hammered Piston Ring Co., Inc., Baltimore, Md.; Chicago Steel Wheel Co., Chicago; the Corcoran Manufacturing Co., Cincinnati, O.; Iron City Products Co., Pittsburgh, Pa.; L. Lawrence & Co., New York City; National Clutch Co., Inc., Irvington-on-Hudson, N. Y.; Roberts Brass Manufacturing Co., Detroit, Mich.; Charles Schutte Body Co., Lancaster, Pa.; Sears-Cross Co., Brooklyn, N. Y.; the Special Tool Engineering Co., Dayton, O.; the Trexler Co., Philadelphia; Wellman, Seaver, Morgan & Co., Akron, O.

Among other firms elected within the past two months are the following:

General Asbestos and Rubber Co., Charleston, S. C.; Hudson Motor Specialties Co., Philadelphia; McQuay-Norris Manufacturing Co., St. Louis, Mo.; Macbeth-Evans Glass Co., Pittsburgh, Pa.; Midwest Engine Co., Indianapolis, Ind.; Northwestern Chemical Co., Marietta, O.; Perfection Heater and Manufacturing Co., Cleveland, O.; Story Rubber Co., New York City; Toledo Steel Castings Co., Toledo, O.; Triplex Safety Glass Corporation of America, New York City.

MOTOR TRANSPORT CONFERENCE.

A special feature of the National Motor Truck show to be held in the Eighth Coast Artillery Armory, New York, during the first week in January, will be a transportation conference. There will be meetings every afternoon in the interests of manufacturers, distributors, dealers, salesmen and service men, while the evening sessions will be devoted to motor truck owners, operators, traffic managers, shippers and all others concerned in motor transportation. Motion pictures and lantern slides will be used extensively to illustrate the various talks.

IDAHO TO SPEND $15,000,000.

According to W. J. Hall, public works commissioner for the State of Idaho, bond issues of counties and highway districts for road purposes so far this year have reached $11,000 000, and by Dec. 31 will go to $15,000,000. In addition to this the state has levied a tax to raise $1,850,000 for road purposes in the next two years. Only $3,360,188 was available from Federal aid funds for 1917 to 1921, and this allotment was matched by the state some time ago.

EDITOR BECOMES SALES MANAGER.

H. F. Stevens, for eight years automobile editor of the Daily Journal, Springfield, Ill., has resigned to become motor truck sales manager for the Elbert S. Hatcher Co. of that city, distributor of Federal, Commerce and Republic motor trucks in the central Illinois territory.

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Ship-By-Truck Tour of Colorado by 40 Machines

The ship by truck campaign which has been held throughout the country for the past few weeks, reached a climax in the West, Oct. 1, when a caravan of 40 large trucks, loaded with commodities of all kinds, left Denver, Col., for a four-day tour in the northern part of that state. The expedition was made under the auspices of the Rocky Mountain Automobile Trades Association and was in charge of Capt. Hollingsworth H. Hall, late of the motorized machine gun battalion of the First Division, A. E. F.

The purpose of the tour was to better acquaint the farmer and general shipper in small towns with the practical value of the motor vehicle as a method of ameliorating freight congestion, car shortage and exorbitant freight rates. The itinerary included about 20 small towns in the northern section of the state and in each demonstrations were given showing how articles, the transportation of which has puzzled the farmer, can be handled by using the gasoline propelled vehicle. The 40 trucks, which comprised the caravan, were loaded with food supplies of many kinds, farm products, farm machinery, coal and many other commodities.

The demonstration and addresses were in charge of D. H. Elder of the Rocky Mountain Automobile Trades Association, and M. L. Poteet, Firestone representative of the ship by truck movement. A detachment of United States marines from the Denver recruiting office acted as official scouts, being carried in a special army truck, which was equipped with two Browning machine guns and a bombing machine. The caravan was also accompanied by a fleet of seven service machines which were ready to lend assistance in case of accident or other emergency.

Following the tour the trucks were driven to Colorado Springs, where the annual meeting of the Rocky Mountain Automobile Trades Association was in session. The following trucks participated in the tour: Acme, 1; All-American, 1; Atterbury, 1; Autocar, 1; Bessemer, 1; Denby, 1; Douglas, 1; Duplex, 1; Fulton, 1; GMC, 1; Hawkeye, 1; Master, 1; Nash, two trucks and trailer; Oldsmobile, 1; Packard, 1; Pierce-Arrow, 1; Reo, 2; Republic, 1; White, 2.

CORNOG AND LEWIS JOIN FABRIC COMPANY.

C. M. Cornog, formerly connected with the Standard Auto Parts Co., Cleveland, O., is now located in Philadelphia as district manager for the Standard Woven Fabric Co., Walpole, Mass., maker of Multibestos brake and clutch linings.

John W. Lewis, formerly with the Champion Ignition Co., Flint, Mich., is now representing the Standard Woven Fabric Co. in Michigan and western Ohio.

UNION TRANSPORTATION LINE.

Several business men of Louisville, Ky., interested in providing reliable and convenient means of freight transportation from Louisville to Kentucky and Indiana points within a radius of 100 miles, have organized the Union Transportation Line with a capital of $100,000.

H. A. Kampmueller, general manager of the new concern, states that the company plans to erect a modern two-story depot, which will be located at such a point as to centralize the business. Among the up-to-date features to be incorporated will be a business room for men at which daily market reports will be on file, with telephone and other facilities, garage space for out-of-town customers and a rest room for women. The plans for the depot provide for sufficient wareroom spaces for the 61 independent truck operators now running in and out of Louisville, and shippers may deliver their merchandise at the station, where it will be allotted its proper space to catch the first truck to its destination.

The new line has made an exhaustive study of the roadway conditions within the 100-mile radius of Louisville, taking in Lexington, Elizabethtown, Hodgensville, Lebanon, Harrodsburg, Lancaster, Nicholsville, Georgetown, Shelbyville, New Castle and all intermediate points in Kentucky, and Corydon, Paoli, Bedford, Seymour and Madison, Indiana, and proposes to establish truck lines to cover this territory as rapidly as they can be put into operation.

GAS HAULED BY TRUCKS.

A new field of utility for the motor truck has been opened in southern California by the transportation of a deadly gas, which is successfully, by fumigation, combatting the destructive black scale on fruit trees in that section. As the railroads refused to carry this gas on account of its poisonous properties, its transportation developed quite a problem, which was solved by the taking of the contract by a transfer company. From a small beginning the company will soon have a fleet of five motor trucks almost constantly in operation, and in all probability this number will be augmented as the field of fumigating operations broadens.

PARADE AT BALTIMORE.

The motor car dealers' association of Baltimore, Md., held a truck pageant in that city Sept. 28, in which 1400 trucks, representing 84 distinct lines of business, took part. While primarily a motor vehicle parade, it was also a real display of business. Many of the trucks were exceptionally well decorated.

FINKELSTEIN JOINS N. A. C. C.

The National Automobile Chamber of Commerce has added I. Finkelstein, formerly associated with the New York bureau of markets, to its motor department.

Hudson River Tunnel Contract Signed by States

The contract has been signed for the joint construction by the states of New York and New Jersey of the proposed vehicular tunnel under the Hudson river from Canal street, Manhattan borough, to 12th street, Jersey City, N. J. This contract provides for the joint construction, operation, repair and maintenance of the tunnel subject to appropriations to be made from time to time by the New York and New Jersey legislatures; the tunnel to be for the exclusive use of vehicles and pedestrians. No franchise or right can be given to a corporation to operate trolley or subway cars except with the approval of the governors and legislatures. If either state attempts to tax the income from operation or property acquired in construction of the tunnel, the tax must be paid out of the share of tolls due the state levying the tax.

The contract also has a default clause intended to protect either state in the event of the default of the other. Each state has appropriated $1,000,000 for the commencement of construction, the estimated total cost of the project being $12,000,000. As there are no contractual obligations on either state to make further appropriations, the default clause was deemed necessary. If one of the states defaults the other has the option of completing the tunnel at its own expense and recouping itself out of the tolls payable to the defaulting state if the construction had been finished according to contract.

The states agree that when the tunnel is completed a schedule of tolls will be established sufficient to repay each of the states, within 20 years, principal and interest of the entire amount advanced for the construction. The making of the contract was authorized by act of legislature April 11, and the tunnel commissions then organized and created an engineering staff. Rapid progress has been made and a final report is expected soon from Clifford M. Holland, chief engineer. Bids have been opened on a contract for test borings of the river bed.

NEW ILLINOIS AUTOMOTIVE CONCERN.

The firm of Nolan & Owings is to enter the automotive distributing field at Taylorville, Ill., and will handle cars, trucks and tractors and run a general repair business. The company is erecting a one-story, concrete, fireproof garage in which to locate its headquarters.

ALEXANDER NOW WITH INTERNATIONAL.

The International Mack Corporation has made A. Leslie Alexander sales manager of its Seattle, Wash., branch. Mr. Alexander was formerly with the Kelly-Springfield truck agency in Seattle and Spokane, Wash.

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Freight Claim Hand Book Is Issued by N. A. C. C.

The National Automobile Dealers' Association of St. Louis, Mo., is distributing among motor car dealers a hand book of information for receivers of self-propelling vehicles regarding freight claims, damaged shipments, unloading of cars, etc., which was recently compiled by the Detroit traffic committee of the National Automobile Chamber of Commerce.

The purchaser of a self-propelling vehicle, whether truck or automobile, is especially desirous of receiving his consignments in first class condition; this is also the aim of the manufacturers. Thousands of dollars are expended annually to improve loading methods and insure proper inspection at the point of shipment. To assist dealers, to avoid unjust complaints and to the end that better results may be obtained, suggestions are made in this compilation, which, if closely observed and followed, should be found helpful.

In the first place the receiver should be properly equipped to unload his car. A pair of skids or vehicle castors is necessary to slide wheels out of car doors. Double-decked automobiles can be easily unloaded by using chain falls or similar apparatus, thereby reducing possibility of damage.

Make it a point to see the railroad cars before they are opened. Examine seals and other protective devices on all car doors, both side and end. Take the seal numbers—this is most important. Retain all the seals for your protection until you know there has been no loss or damage.

After opening the car, inspect the contents, before unloading, as to the condition of the blocking, decking and general appearance of the shipment. This is the time to have the railroad agent verify any shortage or damage by making a notation on the freight bill over his signature. At the same time, in case of loss or damage you should also have an affidavit prepared by the party inspecting and unloading the car indicating the condition of the shipment.

In the case of a carload seriously damaged by fire or wreck, communicate by wire to the factory traffic manager at the point of origin and be governed by his instructions. In all cases of damage, make an early report to the factory traffic manager, outlining clearly complete details and your opinion as to the cause in order that suitable action be taken to prevent recurrence. Remember that the contents and condition of every shipment are carefully checked by the factory, and that any loss or damage is chargeable to the transportation lines, and your claim should be entered with the delivering carrier. If you permit the railroads to do your unloading it should only be under your supervision.

In filing a claim for loss or damage against the carrier make a complete statement of your case on the proper form, accompanied by the following documents: Original paid freight bill; original bill of lading, if not previously surrendered; itemized invoice, verifying the amount of your claim for lost, damaged or repaired parts; affidavit from party unloading car; anything else that will prove your claim conclusively. Claims should be filed immediately; if not filed within six months of arrival date they cannot be accepted by the carrier.

Satisfy yourself as to the proper freight rate from the factory. In the event you are charged in excess of this rate, file claim for refund of the overcharge with the railroad agent on the proper form, and attach the original paid freight bill and bill of lading if not previously surrendered. Keep carbon copies of original claims and all papers sent to the railroad agent or claim department. Give each claim a consecutive number and see that the carrier acknowledges receipt, giving his claim number. Always show both of these numbers in subsequence references to the claim. Forms for use in making claims may be obtained from your freight agent.

The hand book also includes fac similes of the forms to be used in filing loss and damage claims and also claim for overcharge.



Exhibit of the New York State Department of Farms and Markets to Boom Rural Express Service at the Big Fair at Syracuse.

State Boosts Rural Express at New York Fair

A new feature of the 78th annual New York State Fair, which closed at Syracuse, N. Y., Sept. 13, was the rural motor express exhibit arranged under the auspices of the Division of Food and Markets of the State Department of Farms and Markets. It is estimated that more than 175,000 persons viewed this exhibit, which was housed in the States Institute building.

An interesting feature were three heavily loaded trucks that traveled long distances to actually demonstrate what trucks can do. An Oldsmobile, loaded with a ton and a half of potatoes and apples, traveled from Buffalo to Syracuse in less than two days running time, arriving at the fair in perfect condition. A Brockway, heavily loaded with bailed straw, was driven from Cortland to Syracuse, and a Sanford carried a load of butter tubs from Syracuse to a butter manufacturer in Buffalo. These trucks also gave demonstrations every other day in conjunction with 20 farm tractors.

The publicity department of the exhibit distributed 6000 pamphlets describing the progress of the rural motor express and its advantages. About 1100 individuals, mostly farmers, but including physicians, contractors, ministers, county agent leaders, librarians, school teachers, engineers, railroad men, newspaper men and periodical representatives, signed cards requesting full information on the subject.

BOESSLING WITH AMERICAN TRUCK COMPANY.

H. H. Boessling, formerly with the Packard Motor Car Co., has accepted a position as general sales manager with the American Motor Truck and Tractor Co., whose factory is at Middletown, Conn., and executive office at 110 West 40th street, New York. The American motor truck is made in two-ton and four-ton sizes and standard units are used throughout its construction.

TRUCK DRIVERS REPLACE ENGINEER.

For some years the fire department of New Bern, N. C., has been in charge of a practical engineer. On the resignation recently of Benjamin F. Williams, who has held that position for some time, the office was abolished and the duties were assumed by the drivers of the three motor trucks included in the fire fighting equipment of that place.

SERVICE FACTORY BRANCH IN CHICAGO.

H. M. Quigley, formerly of St. Louis, has been appointed manager of the factory branch recently established by the Service Motor Truck Co. at 2617-2625 South Wabash avenue, Chicago.

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Industry Will Unite with Government For War Work

Through the foresight and progressive spirit of General C. C. Williams, chief of the ordnance department of the United States army, the combined engineering talent of the automotive industries of the country will in the future co-operate with the government in the development of new and improved engines of warfare. On request of General Williams, who assumed the initiative in the matter, the Society of Automotive Engineers appointed a board representing its various spheres of activity to work with the war department, made up as follows:

Chairman, H. W. Alden, Timken-Detroit Axle Co.; W. G. Wall, National Motor Car and Vehicle Corporation; J. G. Vincent, Packard Motor Car Co.; Dent Parrett, Parrett Tractor Co.; C. F. Kettering, Delco Co.; George M. Dunham, consulting engineer, formerly president of the Society of Automotive Engineers; Charles M. Manley, president, and Coker F. Clarkson, manager, of the Society of Automotive Engineers.

Members of the technical staff of the ordnance department, who met with the civilian engineers, in addition to General Williams, consisted of Colonels C. L. H. Ruggles, L. B. Moody and J. B. Dilliard.

Prior to the war there was no organized co-operation between military and civilian experts, with a loss to the government of much valuable technical knowledge and experience. Under the new system the efforts of the ordnance department will incorporate the fruit of the combined labors of the entire American automotive industry, and when the state of development of this industry is considered, as compared with that in other countries, there is much reassurance for the welfare of the United States in this fact.

The combined boards will discuss designs of all motor equipment material, particularly tanks, tractors and caterpillar gun mounts of every description. It is planned to hold meetings every two months to go over new designs of the ordnance department and to submit suggestions for correction and improvement. The frequency of the meetings will insure the quick and constant transmission of the latest civilian engineering ideas to the government and result in the development of war equipment that will be the last word both in basic design and detailed construction.

PACKARD TRUCK SHOW AT PITTSBURGH.

The Packard Motor Co. of Pittsburgh, Pa., recently held a truck show in its salesroom in Baum boulevard, that city. The exhibit included every make of Packard truck from 1½ to 6½ ton models. This is the first time in this city that all sizes of any make of truck have been assembled at one time for the information of truck buyers.

SELDEN TRUCK CORP. COMBINES TWO ORIGINAL COMPANIES.

The new Selden Truck Corporation, which was recently incorporated to combine the manufacturing and sales divisions of the Selden companies which were previously separate corporations, has completed its organization as follows:

President, George C. Gordon; first vice president, in charge of manufacturing, William C. Barry, formerly vice president and general manager of the Selden Motor Vehicle Co. and first vice president of the Selden Motor Sales Co.; second vice president, R. H. Salmons, a vice president in the old organization; third vice president and sales director in charge of sales and advertising, H. T. Boulden, a former vice president of the Selden Motor Sales company; secretary, S. P. Gould; treasurer, E. B. Osborn; sales manager, C. E. Williams; chief engineer, J. R. Coleman; advertising counsel, C. Henry Mason.



Hal T. Boulden, Third Vice President, Selden Truck Corporation.

The only new man in the Selden organization at this time is R. H. Bollard, who was added to the directorate as a representative of the New York financial interests. The new company will maintain its executive offices at the factory in Rochester, N. Y. There will be no immediate change in the present sales force.

PHILADELPHIA CHAUFFEURS' DEMANDS.

An increase in wages is demanded from the Philadelphia Team Owners' Protective Association by the International Brotherhood of Teamsters, Chauffeurs, Stablemen and Helpers of America, Local No. 470, which comprises about 1500 men, drivers and helpers.

The scale set by the union men is $30 a week for driving trucks not exceeding three tons, $33 for trucks not exceeding five tons and $35 for trucks exceeding five tons. The Owners' Protective Association includes 120 employing draymen in Philadelphia, and it has taken the demand under advisement.

First M. T. C. School Opened at Camp Holabird

The first of four large vocational training schools to be established by the Motor Transport Corps has been opened at Camp Holabird, Baltimore, Md.

The entering class is composed of 400 men. They will be given a preliminary course of four weeks, including psychological and trade tests and the fundamentals of military life, and at the completion of this course each man will be classified and his future activities in the school determined.

Following the preliminary course are four others covering all branches of automotive work, classified as follows: School of chauffeurs, school of auto mechanics, school of inspectors and foremen, school of automotive engineers. The plan is to produce motor truck drivers and mechanics with sound fundamental training, and men of good general education will have an opportunity to take the automotive engineering course, which will last one year and will be given at one of several schools of technology. This will qualify the students as Motor Transport Corps officers or superintendents of shops in the automotive industry.

The school instruction will alternate with periods of production work in the shops, service park units operation and with operating units in the field. Instruction will be given by lectures and demonstrations in the buildings which are equipped especially for school work and set apart from the shops. It is expected that 1500 students will pass through these schools yearly.

The formal opening of the Holabird school was attended by Secretary of War Baker, Senators J. L. France, Hoke Smith and C. S. Thomas, General March, chief of staff, and Brigadier General C. B. Drake, chief of the Motor Transport Corps.

Civilian instructors will be employed and all students will devote their entire time to the courses. The teachers include Professor Dean A. Fales, formerly in charge of the gas engine department of the Massachusetts Institute of Technology, and Major A. A. Case, formerly professor of applied science at Ohio State University. The organization and direction of this system of Motor Transport Corps schools are in charge of Col. J. J. Fulmer.

In addition to the Holabird school it is planned to open shortly three similar schools at Camp Jesup, Atlanta, Ga.; Camp Normoyle, San Antonio, Tex., and Camp Boyd, El Paso, Tex. Each of these camps has the complete standard M. T. C. equipment, including huge cement, steel and glass structures covering five acres, with excellent machinery and tool supplies.

The Fremont Motors Corp., capital $2,000,000, has been organized at Fremont, O., to manufacture trucks and cars at the old Burford plant.

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GOVERNMENT TEST FOR ROAD WEAR

A series of experiments is being conducted by the bureau of public roads at the Arlington experimental farm of the United States department of agriculture to determine the impact of auto trucks on roads. These experiments are undertaken to secure data on the design of road surfaces and foundations to withstand heavy traffic.

The apparatus used in these tests consists of a heavy steel cylinder in which is fitted a plunger, four inches in diameter and eight inches long, similar in construction to a hydraulic jack. A hole is left in the bottom of the cylinder in order to prevent air cushioning under the plunger. On the top or head of the plunger there is securely fastened a heavy steel plate on which the impact of the truck wheel is received. The entire apparatus is supported rigidly in a concrete box placed in the road in such a position that the height of the steel plate on top of the plunger may be made just flush with the road surface. The height of the upper surface of the plate can be varied by proper steel discs placed under the plunger. In order that the front wheel may pass over and not touch the steel plate on the plunger, a steel bridge is used which is automatically tripped by the front wheel in passing over it. This releases a catch and allows a weighted level to pull the bridge clear from the apparatus, thus leaving the steel plate exposed and ready to receive the impact of the front wheel and the plate may then be protected from the impact of the rear wheel.

The approach to this impact apparatus is made of two-inch planking about 20 feet long and is so constructed that the height of the planks may be varied above the road surface to give various heights of drop, and also can be moved forward or backward to give the proper jumping distance from the jump-off point so that the wheel will strike the center of the plunger at all speeds.

For recording the impact value a copper cylinder, one-half inch in diameter by one-half inch long, is placed under the plunger of the jack. The impact received on the plunger is transmitted to the copper cylinder, where it produces a corresponding permanent deformation. The cylinders are prepared from pure copper bars and are carefully machined to dimensions and great care is taken that the copper is annealed very uniformly, and an exacting test is made of each cylinder.

A United States army three-ton class B truck, with solid rubber tires, was used in these experiments. The weight of the truck empty is 11,400 pounds.

The impact conditions under which these tests were first conducted was the simple falling of the truck wheel from one level to another at different speeds of the truck, the height of drop varying from a quarter inch to three inches. Other conditions of compact will be investigated later. The magnitude of the impact is dependent upon: 1, height of drop; 2, weight of truck and load; 3, kind and condition of tires; 4, characteristics of springs; 5, speed of truck.

The tests thus far give only the relative impact values and do not attempt to demonstrate the destructive effects of these impacts. This depends upon the road surface, the type of construction and the foundation, and to arrive at the destructive effect of these impact forces it is proposed in another series of experiments, to subject certain road surfaces to these same impacts delivered repeatedly, until failure occurs. Machinery for this purpose is now under construction. The results indicate a general tendency of increased impact toward the higher speeds, although the increment of increase is less as the speed increases.

In conducting these experiments it was soon discovered that the action of the truck springs had a great influence on the impact results. When the wheel leaves the jump-off point the spring snaps open and produces a greater downward acceleration of the unsprung parts than that due to the action of gravity alone. If the period of vibration is such that the spring has acquired its maximum acceleration, the impact value will be a maximum. It was also noticed that the impact was appreciably affected by the conditions of power, whether on or off. That is, if the impact occurred when coasting it was less than when the power was being applied to the rear wheels. This difference amounted, in some cases, to as much as 30 per cent.

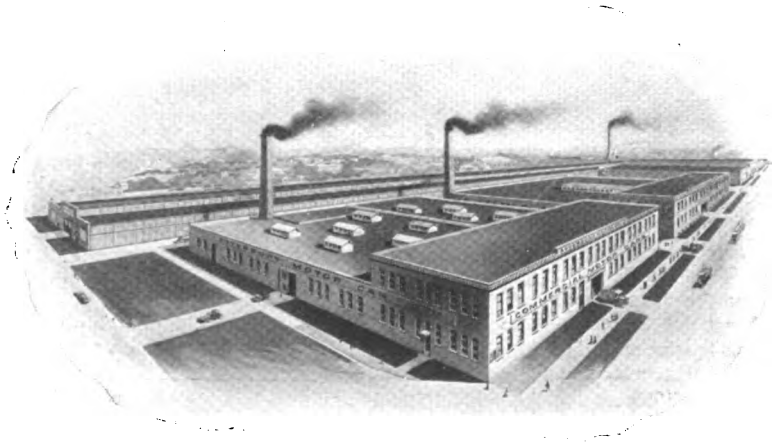
These results are presented only to show the general tendency of impact values. It is the intention to enlarge upon this investigation to determine the relative effects of kinds of tires, loads, speeds, spring characteristics and character of road obstructions and defects which produce impact values and attempt to arrive at some definite conclusions as to the destructive effects of truck loads on different types of roads. It is hoped that this will ultimately result in definite road design data and also lead to the establishment of rules and laws for the allowable loads and speeds of auto trucks and possibly furnish an equitable basis for license fees. Special apparatus is being designed to obtain autographic records of these tests.

ATTERBURY COMPANY WILL BUILD ADDITION.

The directors of the Atterbury Motor Car Co., Buffalo, N. Y., have just voted to build large additions to its present factories in an endeavor to meet the greatly increased demand for Atterbury trucks. The manufacturing facilities will have to be almost doubled to fill the orders dealers are sending in from all over the country.

For 10 years Atterbury trucks have been built to a standard of highest quality.

Every man in the Atterbury factories knows that quality must always come first—it can never be sacrificed to speed. These careful methods have brought real results. They have eliminated most of the maintenance expense for Atterbury owners, they have added years to the life of every truck produced, and they have made the Atterbury name the symbol of highest service.



The Plant of the Atterbury Motor Car Co., Buffalo, N. Y., as It Will Appear When the Additions Planned Shall Be Made.

The demand for Atterbury trucks is world wide, and the company at the present time is receiving at least two orders for every machine it can possibly build with its present facilities, and for this reason the directors and officials of the company are doing their utmost to hasten expansion.

GMC IN PITTSBURGH DISTRICT.

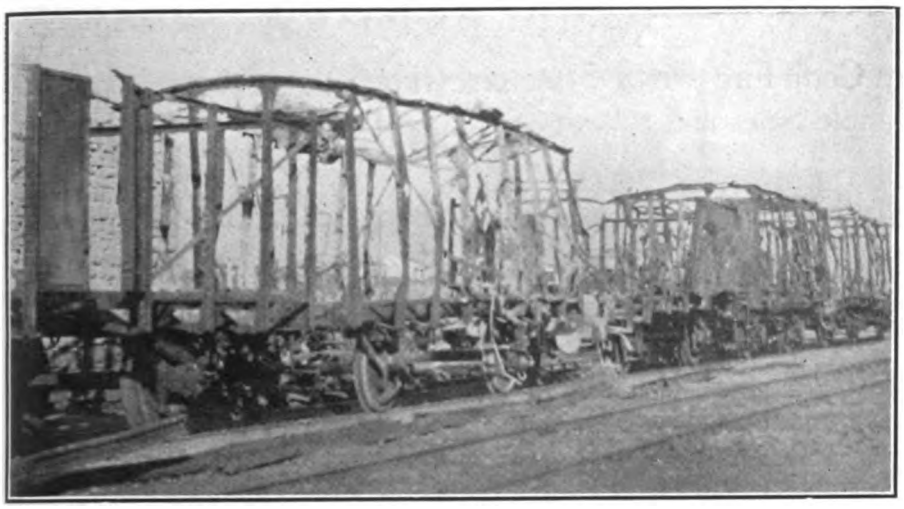
J. S. Haynes, formerly district sales manager of the General Motors Truck Co., Pontiac, Mich., has been appointed general manager of the General Motors Truck Co. of Pittsburgh, Pa. The Pittsburgh concern was recently formed to handle GMC trucks in western Pennsylvania, West Virginia and a part of Ohio.

VICTOR TRUCK OFFICIALS.

The Victor Motor Truck Manufacturing Co., St. Joseph, Mich., has elected C. C. Van Wagner secretary and he will have charge of the operating end. The mechanical department will be under the direction of Louis C. Koontz of St. Joseph.

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RED CROSS TRUCKING IN ROUMANIA



Frame of Freight Cars Destroyed by Burning by Germans Demonstrates One Reason for Shortage of Railroad Facilities in Roumania.

The usefulness and practicability of the American motor truck has been forcefully demonstrated in Roumania in the work of the Red Cross, and they are on the way to replace the railroads as a means of inter-city transportation in that country. The railroads, which were never efficient nor built according to modern engineering standards, are in a totally demoralized and disorganized condition. Social unrest renders the probability small that Roumanian financial interests will be able, within any reasonable time, to undertake railroad reconstruction.

Motor truck transportation, on the other hand, does not require such an enormous investment in a single enterprise. Individuals, business firms and cities may provide their own motive power and rolling stock and, co-operatively, may provide good roads. The motor trucks now being used by the Red Cross in its fights there against epidemics of typhus fever have excited so much popular enthusiasm and have proved so successful that they show great promise of monopolizing the local and long haul transportation field.

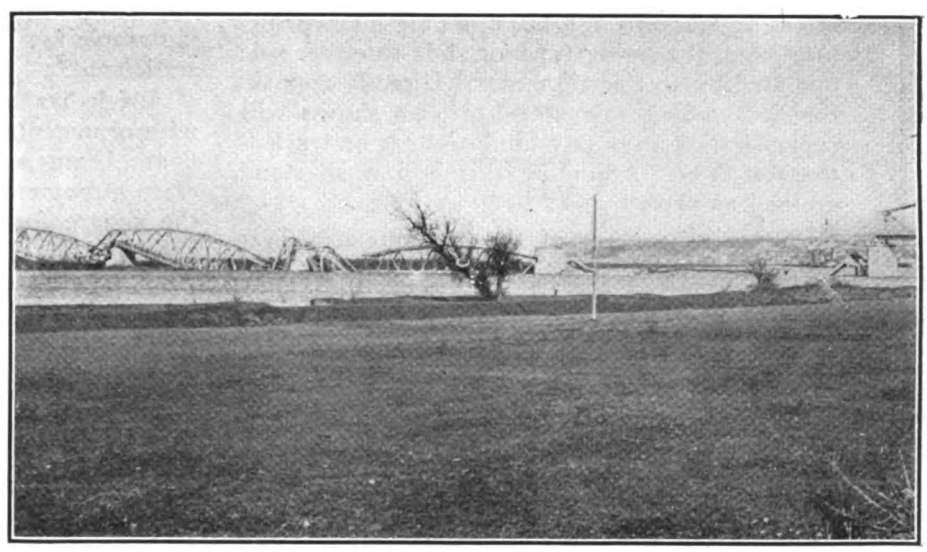
During the past year more than 300 Americans have assisted in the fight of the Red Cross to stop the spread of typhus fever in Roumania. Hospitals have been erected at strategic points and companies of field workers have been sent into the outlying villages. The big demand for food, medical supplies and clothing that has resulted is far too great for the wretched railroad service to supply. Of the 2000 locomotives used in Roumania before the war, but 84 are now in operation, and there is a corresponding shortage in other rolling stock. The roadbeds have not been kept in repair and the operating personnel is but loosely organized.

When the Red Cross relief work began officers in charge supplemented railroad transportation by as many camions and motor lorries as they were able to borrow from the French, Italian and ever-willing British military commanders. But bad roads and broken bridges threatened delay that would have made it impossible for the medical units to successfully combat the epidemic. The Roumanian government was appealed to and a large number of oxen were obtained. Primitive supply trains were organized and long processions of ox carts went creaking over rutted roads. Camels were purchased and caravans of supplies went plodding with heart-breaking deliberation over mountain trails. But the daily mileage was so little and the loads so light that small progress could be made against the ravages of disease.

Then the tide turned. A long-hoped-for fleet of American motors arrived. The oxen and their crews were set at work repairing roads, and in a few weeks time the great trucks, loaded to capacity with supplies that meant life or death to thousands, went thundering up the rocky passes to the marvel and delight of the inhabitants. New routes were opened up as fast as roads could be repaired and service and fuel stations established.

The crown prince of Roumania recently purchased six American trucks personally to establish a much needed route. The trucks have been added from time to time and the motor service has become the country's chief mode of transportation. Native nurses have been trained and native chauffeurs drive the vehicles.

The odds in the fight against the dreaded disease have been cut down and the prospect of checking its progress this winter is bright, for along with American transportation, American ideas of sanitation are gaining a foothold in Roumania, and the people have learned, like Americans, to stand behind the Red Cross and its standards.



Bridge Between Austria and Roumania Demolished to Prevent Austrian Army Crossing River Prevents Continuous Railroad Haulage in Middle Europe.

EISEMANN TO BUILD IN CHICAGO.

The Eisemann Magneto Corporation of Brooklyn, N. Y., is to erect a two-story structure on a site recently purchased at 3641-43 Michigan avenue, Chicago, which will be used as a service station, garage and repair shop. Provision will also be made in the new building for the Chicago office and show room of the company. This new headquarters building will be 52 by 143 feet, of brick construction, with colored terra cotta front. A full line of Eisemann magnetos and parts will be carried in stock and the repair work will be in charge of expert machinists.

OHIO TRAILER CHANGES NAME.

The stockholders of the Ohio Trailer Co., Cleveland, O., have voted to change the name of that company to the Ohio Motor Vehicle Co. and authorized an increase in the capital stock from $300,000 to $1,000,000.

The company will soon put on the market a high class six-cylinder pleasure car, in addition to continuing the production of its line of Ohio trailers. Contracts have been placed wth automotive material manufacturers on the basis of 1000 of the new pleasure cars to be built the first eight months of 1920.

J. A. Haskell has been appointed assistant general sales manager for the Grant Motor Car Corp., Cleveland, O.

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COMBINATION SERVICE STATION

Three-Story Brick and Terra Cotta Fire Proof Structure with Large Storage Area and Ample Sales and Repair Department

UNUSUAL care has been taken in the construction of the accompanying plan to develop a type of structure that will afford every essential for the sales and service of one or more makes of trucks and cars.

The general lay out calls for a site rectangular in shape, having a court or driveway on one side and a side street or lane on the other. It measures 80 feet wide by 192 feet long, three stories in eight with basement. The basement has not been shown owing to limitation of space, but there should be no obstacle to adaptation to meet individual requirements. A large boiler room should be provided, receiving and shipping departments, storage for parts of bodies, locker room for the handling of accessories taken from cars during repair period, and storage for oils, greases and other material of a similar nature.

On the ground floor occupying the entire front area is a show and sales room where at least six vehicles can be tastefully arranged for display purposes. Entrance is obtained through two large double doors on either side of the central bay. Access to the show room for trucks is through a doorway from general storage area.

In connection with the sales and show room there is a sales manager's office with a private office adjoining, a passenger elevator that runs from the first floor to the top, the entrance to this being off the show room. At the left of the entrance from the general garage is a stairway running from basement to the roof and next to this is a toilet for sales department.

Occupying five-sevenths of the main floor one finds the general storage space utilized chiefly for trucks that are coming in and going out every day. Entrance to this is obtained from a side street or lane through large double doors which may be of the swing type, or slide to either side, operated by an electric motor. Directly opposite the door a large elevator has been shown with capacity for taking any kind of a car or truck to the top floor. Adjoining this is a wash stand, drained as shown.

The arrangement of the columns has been studied and their present location permits easy movement of the largest type of machines. At the extreme rear at the right is a stairway leading to the boiler room in the basement below.

The second floor has been given over to repair work, a number of individual units being shown. At the front end is an electrical repair department. Adjoining the electrical department is a large stock room where parts and accessories may be kept.

The largest part of second floor is devoted to general repair work. A truck may be reconstructed in this shop or a new truck could undoubtedly be produced if the management desired to build one. At the rear of the repair section two very important factors have been provided, a machine shop and a forge. These two units are essentials for a service station, for when available most any kind of repair work can be accomplished. A toilet and wash room has also been provided and this adjoins the stair well.

The top or third floor is given over to the finishing of cars, with the various departments where these works are carried on. The main office is also located on this floor, occupying the entire front. In connection with this is a manager's office and also a ladies' room and toilet.

The first of the departments located on this floor is the wood working shop, in which is a full equipment of wood working tools and machines, and there is an upholstery shop.

The painting section has been made very complete to insure a high quality of work and includes two varnish or finishing rooms, dust proof in construction, which by special heating apparatus are kept at an even temperature at all times, so that the finishes applied may be dried uniformally and become well hardened. Adjoining the varnish room is an enameling room, in which the fenders are dipped and baked and dyed, the same heating facilities being utilized.

The general construction is of fireproof materials, complying with the underwriters' laws of the different cities and states.

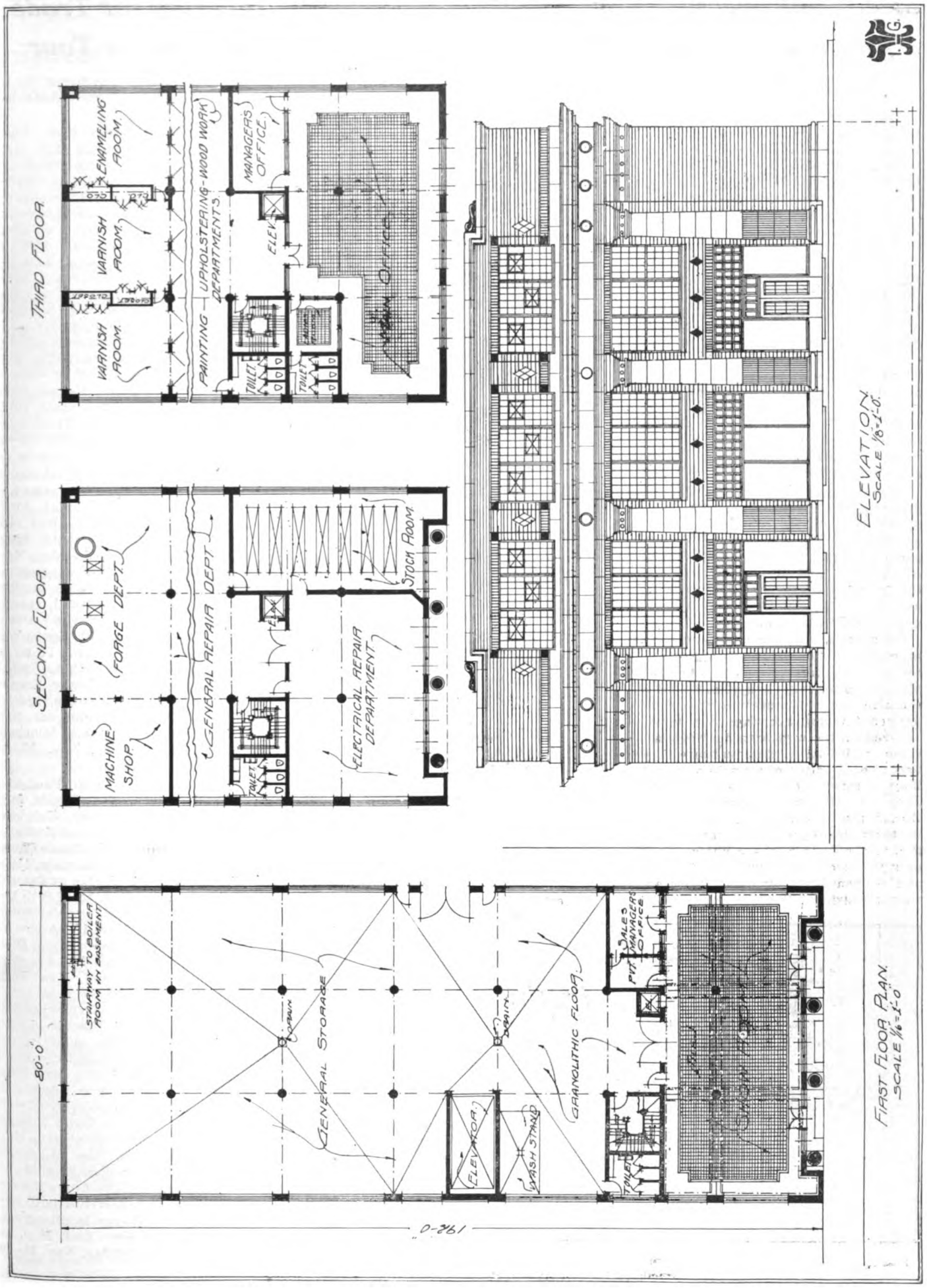
Concrete is the element of the foundation, which should be made large enough to carry the loads placed upon it, and should be at least two feet thick. Care should also be taken in providing ample footings to carry the building without settlement.

Brick has been used for the super-structure with ornamental terra cotta for trimmings. The floors, beams and columns are of reinforced concrete, strong enough to carry a load of 150 pounds the square foot (live load) installed under the best methods for reinforced concrete work. The windows are steel sash with wire glass, ventilated in sections as shown on the upper story of the front elevation.

The heating is by steam, wall radiation in shop areas, and radiation for show room and office treated with ornamental cast iron grills.

The approximate cost of a building this size and type would be in the vicinity of $100,000. A very fine home for a first class automobile and truck concern.

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Steel Controversy Before Federal Commission

Arguments in the on-coming controversy between the steel producing industry and the steel fabricating and manufacturing interests over the abolition of the long-established system of basing prices of raw steel throughout the United States on a single basing point at Pittsburgh, Pa., have been made public at the Federal Trade Commission. Five great steel consuming interests—the Western Association of Rolled Steel Consumers, the Birmingham Civic Association, the Joint Committee of Civic Organizations of Duluth, the Southern Association of Steel Fabricators and the State of Minnesota—have voluntarily asked the Federal Trade Commission to assume jurisdiction and declare the system in violation of the Clayton anti-trust law and the Federal Trade Commission law as constituting illegal price discrimination and an unfair method of competition in interstate commerce.

These interests have been named as direct parties to the issue: The United States Steel Corporation and four of its subsidiaries—the Illinois Steel Co., Carnegie Steel Co., Tennessee Coal, Iron and Railroad Co. and Minnesota Steel Co.—the Inland Steel Co., the Interstate Iron and Steel Co., the Steel and Tube Co. and the Gulf States Steel Co.

On request of the commission for expressions of opinion from all parties interested, 43 interests have submitted statements opposing the applications for the abolition of the system, and 36 have answered favoring a change, a total of 79. Should the commission decide to assume jurisdiction and adjudicate the long-mooted question of a single or plural basing points, the case, according to Judge E. H. Gary, chairman of the United States Steel Corporation, would probably develop into the "greatest law suit in the history of the country." Not only the entire steel industry and allied and dependent producing and manufacturing industries would be affected, but scores of other industries in no way related to the steel industry would likewise be affected.

The automotive industry as a direct consumer of steel would necessarily be directly concerned in the controversy.

BEARINGS COMPANY HAS FOUR FACTORIES.

The directors of The Bearings Co. of America, Lancaster, Pa., at a recent meeting, decided to increase the thrust bearing factory facilities of the company, and a building of the latest type of construction is to be erected in the immediate future which will give 60,000 square feet additional floor space.

When the new unit is completed the Bearings company will have four separate factories, each devoted to some particular product. In factory No. 1 will be made the complete thrust ball bearings; No. 2 will handle Star ball retainers of all types; No. 3, Sterling universal joints, and No. 4, drop forgings.

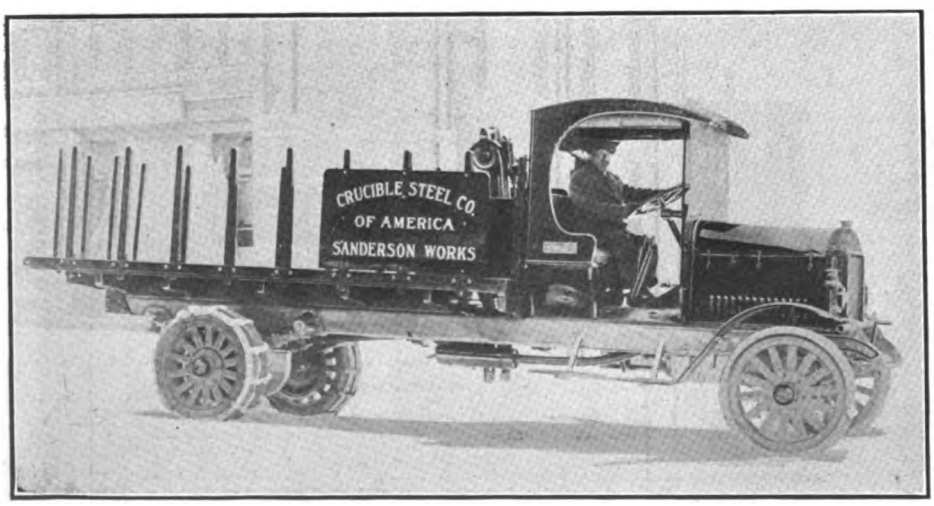
During the recent war The Bearings Co. of America supplied large quantities of thrust bearings for use in Liberty airplanes, gun mount bearings for navy ordnance, thrust bearings for use in class B motor truck steering gears, and for many other departments of war work.

MURRAY SAILS FOR EUROPE.

Arthur T. Murray, president of the Bethlehem Motors Corporation, Allentown, Pa., sailed for England, Sept. 15, to look after the interests of the company in connection with an order recently taken for trucks of all sizes to be shipped to Europe on specified weekly deliveries at New York.

This order totals more than 4200 trucks and will represent an aggregate value of more than $1,000,000. Other inquiries from European countries necessitated Mr. Murray's presence abroad, where he will remain for three months.

Mr. Murray will also look after the interests of the American Bosch Magneto Corporation, Springfield, Mass., of which he is president.



Sanford Five-Ton Truck, with Stake Platform Body and Hydraulic Hoist, in the Service of the Crucible Steel Co. of America.

Itinerary for Trade Conference Tour

The following official itinerary of the International Trade Conference tour has been announced:

Friday, Oct. 17—Leave New York, Pennsylvania railroad, parlor cars, regular train 3:04 p. m. (eastern time); arrive at Atlantic City, 6:20 p. m. Saturday, Oct. 18 to Sunday, Oct. 26—In Atlantic City. Sunday, Oct. 26—Leave Atlantic City, Pennsylvania railroad, parlor cars, regular train, 4:45 p. m; arrive at Philadelphia, 6:15 p. m. Monday, Oct. 27—In Philadelphia. Tuesday, Oct. 28—Leave Philadelphia, Broad street station, Pennsylvania railroad, parlor cars, regular train, 3:25 p. m.; arrive at Baltimore, Union station, 5:34 p. m. Wednesday, Oct. 29—In Baltimore. Thursday, Oct. 30—Leave Baltimore, Union station, Pennsylvania railroad, parlor cars, regular train, 10:39 a. m.; arrive at Washington, 11:37 a. m. Friday, Oct. 31 and Saturday, Nov. 1—In Washington.

Sunday, Nov. 2—Leave Washington, Pennsylvania railroad, special train, 9 p. m. Monday, Nov. 3—Arrive at Pittsburgh, 7:30 a. m. Tuesday, Nov. 4—Leave Pittsburgh, Pennsylvania lines, special train, 10 p. m. Wednesday, Nov. 5—Arrive at Cincinnati 7 a. m. (central time); leave Cincinnati, Union station, C. C. C. and St. Louis railroad, special train, 10 p. m. Thursday, Nov. 6—Arrive at St. Louis, 8 a. m.; leave St. Louis, Wabash railroad, special train, 11 p. m. Friday, Nov. 7—Arrive at Kansas City, 7 a. m. Saturday, Nov. 8—Leave Kansas City, Chicago & Great Western, special train, 3 p. m.; dinner in dining car, club car. Sunday, Nov. 9—Arrive at Minneapolis, 7:30 a. m. Monday, Nov. 10—In Minneapolis and St. Paul.

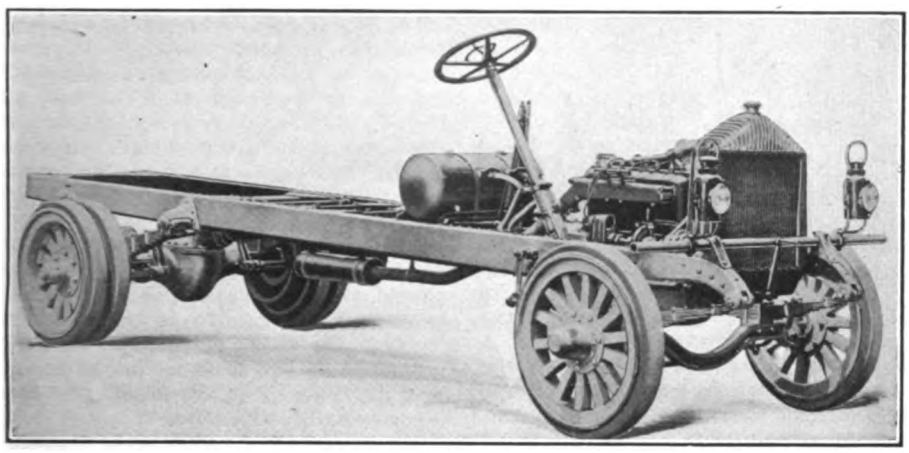
Tuesday, Nov. 11—Leave St. Paul, Chicago & Northwestern, special train, 6:30 p. m.; dinner in dining car, club car. Wednesday, Nov. 12—Arrive at Chicago, 7 a. m.; Thursday, Nov. 13—Leave Chicago, Michigan Central, special train, 11:59 p. m. Friday, Nov. 14—Arrive at Detroit, 7:25 a. m. Saturday, Nov. 15—Leave Detroit, New York Central, special train, 11:59 p. m. Sunday, Nov. 16—Arrive at Cleveland, 7 a. m. (eastern time). Monday, Nov. 17—In Cleveland. Tuesday, Nov. 18—Leave Cleveland, New York Central, special train, 11:59 p. m.

Wednesday, Nov. 19—Arrive at Buffalo, 7 a. m. Thursday, Nov. 20—Leave Buffalo, New York Central, special train, 9:30 a. m.; arrive at Niagara Falls, 10:20 a. m.; leave Niagara Falls, New York Central, special train, 6 p. m.; dinner in dining car, club car; arrive at Rochester, 9 p. m. Friday, Nov. 21—Leave Rochester, New York Central, special train, club car, 9 p. m. Saturday, Nov. 22—Arrive at Boston, 7 a. m. Sunday, Nov. 23—In Boston. Monday, Nov. 24—Leave Boston, New York, New Haven & Hartford, special train, 4 p. m.; dinner in dining car, club car; arrive at New York 10 p. m. Tuesday, Nov. 25 to Friday, Nov. 28—In New York.

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OVERHAULING SANFORD TRUCKS

Practical Work That May Be Undertaken by the Driver or Owner on Series of Three Standard Unit Built Machines



The Stripped Chassis of the Sanford 3½-Ton Truck, Model W-35, This Being the Standard Design of the Series.

TRUCK overhauling is in general principles a similar work with most of the well known makes and types of machines. Very frequently a good driver may be a skillful mechanic and qualified to do repairing and restoration work, but if he drives regularly he has but little time for attention of any kind. Often the owner will believe it best to have repairing and overhauling done at a service station because he wants his vehicle in service as quickly as is possible, and loss of truck time is expensive.

There are owners who drive themselves, or who believe it economical to have their drivers do overhauling work, and it is this class that this article is intended to advise. One undertaking a truck overhaul must have facilities for working, and the usual tool kit of the truck should be considerably added to, for one will have to handle all the construction units and must disassemble and assemble them and should have such materials as will be needed as spare bolts and nuts, various washers, shims, cotter pins, wire, gaskets of different materials and sizes, a soldering iron, a blow torch, a breast drill, brake lining, rivets, electric tape and waste, cord and stout wrapping paper.

The subject of this article is Sanford trucks, which are constructed from well known standard construction units, including Continental Red Seal engines, Borg & Beck clutches, Warner transmission gearsets, Sheldon semi-floating worm drive axles, Spicer and Daimler type universal and flexible shaft joints, Ross steering gears, Bosch magnetos and Stromberg carburetors.

The article suggests work that ought to be done after a truck has been used for a season and deals with conditions that can be anticipated. So far as possible advice is given, but obviously every possibility cannot be dealt with and the worker must be guided by his own judgment once a condition is known.

The initial work is cleaning the cooling system of the truck, which had best be done before disassembly has been begun.

Flushing the Cooling System.

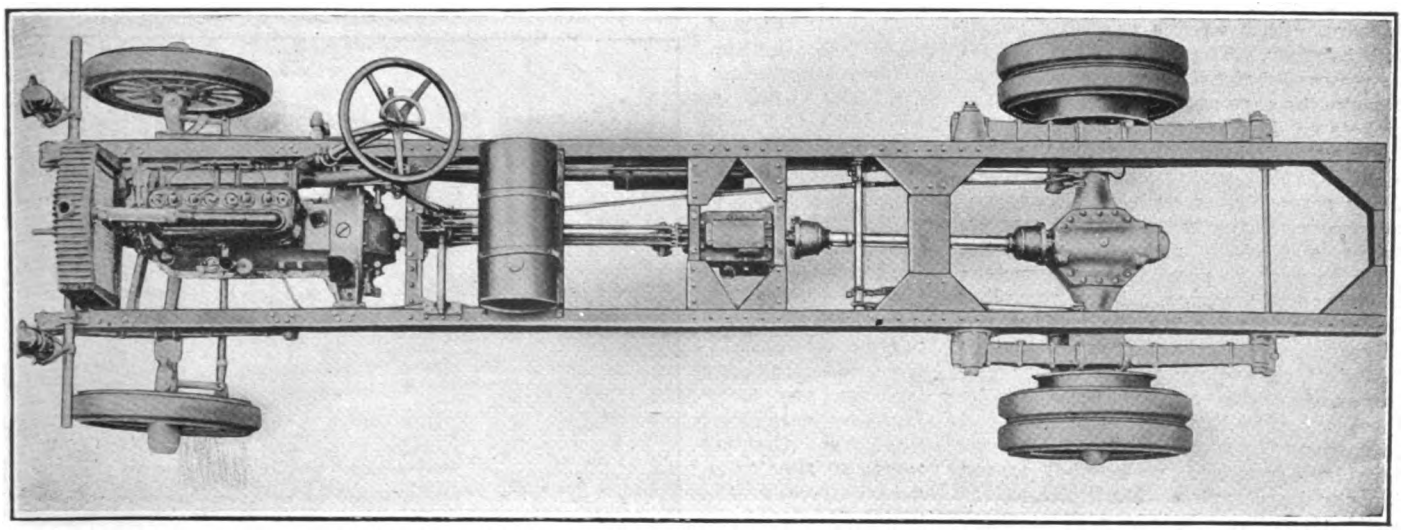
The radiator should first receive attention. It will not be necessary to remove it from the frame unless it leaks badly and even then but rarely, as the core is a tubular section that may be renewed separately. The radiator is constructed in five sections, upper tank, lower tank, two side columns and the core. The top and bottom tanks and side columns are bolted together, enclosing the core so that it is easily disassembled for repairing. If it does not leak, draw off the water, refill the system with a solution of washing soda and hot water, using all the soda the water will readily dissolve. Keep this solution in the system for 20 minutes at least, with the engine running, so the solution may be circulated by the water pump. This done, draw off the solution and flush with clear water several times to remove all loose sediment.

This treatment will eradicate any accumulation of rust, dirt and sediment. It is wise to repeat this cleansing at intervals of once a month while the truck is used, especially after a winter period of use with a non-freezing solution in the radiator. Non-freezing solutions with the exception of alcohol will leave a white deposit on the walls of the cooling system that will reduce the diffusion of heat so much that overheating may result.

The hose connections between the radiator and the engine should be examined. If found soft and spongy they should be removed, as they will not only leak, but the rubber lining may loosen and partially restrict the flow of water.

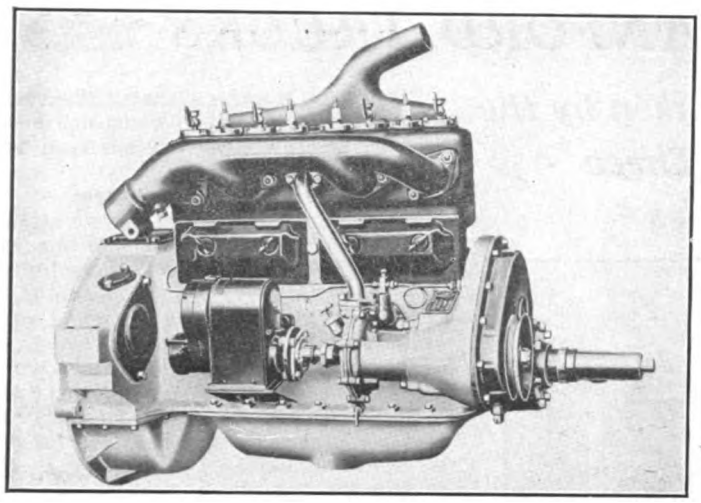
Water Pump.

Examine the water pump and note whether or not the packing nuts at each side of the pump are tight on the shaft. It is good judgment to back off the nuts, dig out the old packing and supply new, soaking it in oil before placing it in the packing nuts. Set these nuts tight



Plan View of the Sanford W-35 Chassis, Showing the Heavy Frame Construction and the Power Transmission System with Two Types of Joints.

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Continental Red Seal Engine of Block Construction, Used in the Smaller Truck Chassis.

enough to insure the stuffing box not leaking. The grease cup at the side of the pump should be kept filled and turned down at regular periods.

Adjusting the Fan and Belt.

Examine the fan bearings and if found loose, adjust them so that the fan will turn easily, without undue friction. Note the fan belt and if in poor condition replace it. Adjust the fan to the belt by the adjustment at the side, so that the fan will drive. The good operation of the fan is very essential to a cooling system.

Two Types of Engines.

The engines in Sanford trucks are Continental Red Seal, built especially for heavy duty truck work. Those of the two-ton chassis are enbloc construction, but the cylinders are cast in pairs for the 3½ and five-ton truck engines. The engines are L head type. As these engines are designed with the object of having all parts easily accessible it will not be necessary to remove them from the frames to do necessary repairing.

To remove the valves, first take out the two plates at the side of the engine covering the valve mechanism, by loosening the winged nuts, two to each plate, and remove the plates. The repairer then has access to the valve stems, springs and push rods. The valve caps are next removed with a wrench or with a punch and hammer. The spark plugs should be removed before taking out the caps. Remove the caps and the copper asbestos gaskets as they are seated on.

The valves may now be removed, either with a valve spring compressor or a heavy screw driver or bar. The spring compressor is the best, but if the screw driver and block are used, place the block as near as possible to the springs to get good leverage. After removing the pins and releasing the springs the valves should slip out of their guides easily. If they do not, due to accumulations of carbon on stems, force may be necessary, care being taken not to bend or damage the stems. After the valves have been removed, remove all carbon deposits by scraping. Mark the valves for identification. It is best when grinding valves to remove one at a time, grind and replace it in the guide, which will prevent error when replacing them.

To grind the valves after the carbon has been removed, place a piece of waste in the side of the valve chamber to prevent particles of the grinding compound getting into the cylinders. Coat the face of the valve with a compound of carborandum and oil in paste form, using a coarse material for cutting, as when a valve is badly pitted, and a finer grade for finishing. Place a small spring on the stem and insert the stem in the guide. A slot or two holes will be found on the head of the valve, in which the grinding tool is fitted. Grind with a rotary motion, a quarter turn in one direction and reverse, with practically no downward pressure. After a few turns allow the spring to raise the valve. Repeat this until the valve face and seat show clean metal, replenishing the compound as needed, but applying it sparingly. The valve and seat should not be ridged. The best seat is when both are polished.

When a ring 1/32 inch wide is shown on the seat and valve the work may be regarded as sufficiently done. With some Continental engines it may be necessary to reform the valve seat, which may be done with a special tool. This is usually necessary after valves have been frequently ground and cannot be seated so as to be gas tight. Carefully remove all the grinding compound from the valves and seats and the waste from the parts. Do not under any circumstances use emery powder for grinding, as particles might reach the cylinders, become embedded in the cylinder walls and damage the cylinders, pistons and rings.

Assemble the valves in reverse of the order of disassembling, screw in the caps with the gaskets under them and set them solidly.

The bearings next receive attention. Remove the crankcase base, which is retained by 11 bolts on each side. It is possible to do all necessary bearing work, such as tightening, from beneath the engine. The pistons may be removed by disconnecting the connecting rod crank pin bearings and drawing the piston and rods from the bottoms of the cylinders. Usually the main bearings are tightened first, starting with the center main bearings. Remove the cap by cutting the locking wire and taking off the nuts.

There will be several shims at each side of the bearing. Take out an equal number of shims on each side and replace the cap and set the nuts solidly. Turn the engine by hand and if the bearing is too tight, replace one or more shims, or if the shims are too thick, make shims of thinner sheet metal or paper till the right thickness is obtained. Try the bearing after each change of shims and tighten the cap securely. The best adjustment is when there is a slight drag at the bearing when the engine is turned. Loosen the cap and repeat the operation with the end bearings till all are properly fitted.

The connecting cap bearings are tightened in a similar manner. Each bearing should be left slightly lose after fitting to allow the engine to be turned easily to "feel" the fitting obtained at the bearing on which you are working. After all bearings have been fitted, set the nuts securely and fasten them.

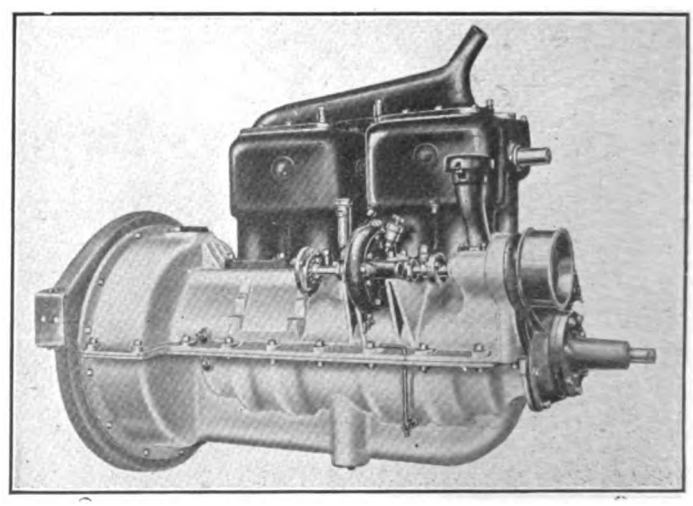
Clean the Engine Base.

Clean out the oil and sediment in the engine base, washing it thoroughly with gasoline. Replace the base on the engine block, fastening the nuts securely. If the gasket between the edges of the base and the engine block has been damaged in removing it, replace with a new gasket cut from heavy paper. To cut this gasket, take a sheet of paper, place it over the edge of the base and with a light hammer strike light blows along the outer and inner edge of the base till the paper is cut through and the gasket is formed to the outline of the base. The holes are cut by using the peen end of the hammer and striking light blows on the edges of the bolt holes. Shellac this gasket and place it on the base flange.

After the base has been attached and the nuts tightened securely, refill it with oil, placing about one quart more than that usually required for the engine in normal use. This is to lubricate the tightened bearings thoroughly when the engine is started.

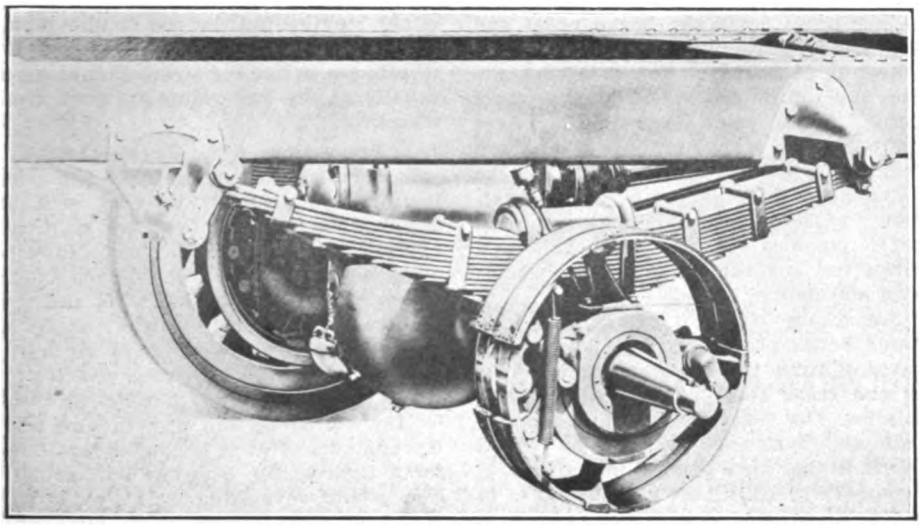
Work on the Timing Gearset.

To reach the timing gearset, disconnect the hose connections between the radia-



Continental Red Seal Engine with Cylinders Cast in Pairs, Used in the Largest Sanford Trucks.

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Section of the Main Frame, Showing the Spring Suspension, Brake and Semi-Floating Axle Shaft.

tor and the engine cylinder jacket, and after taking out the two bolts that secure the radiator brackets to the guides of the supports, remove the radiator. Loosen the two nuts that retain the packing place surrounding the crankshaft and take out the packing. Take out the cotter pin and remove the nut on the end of the fan shaft and the Woodruff key securing the fan. A gear puller may be necessary to start the fan off the shaft, but it may be moved with a screw driver.

Then take off the cover plate of the timing gearset case. With the plate off all the gears are accessible. If the gears are badly worn, the teeth chipped, or they are loose on their shafts, they should be repaired. If much worn they should be replaced with new gears. If the teeth are chipped, remove the gears and grind off the rough edges on a carborandum wheel.

If the gears are loose on their shafts so that they move sideways against the key, new keyways should be cut and new keys fitted. This is best accomplished by taking the shaft and gear to an experienced machinist who is familiar with such work. In replacing the gears care should be taken to note that the gears of the crankshaft and camshaft are in correct relation. Marks are placed on these gears at the factory, usually on the end of the teeth, that will allow one to mesh them correctly.

Look for such marks when removing the gears, and if none are found, mark the teeth that mesh with a prick punch and hammer. Two teeth of one gear should be marked and one of the corresponding gear, so that tooth of the one will fit in between the two marked teeth of the other gear. This is very necessary, otherwise the timing of the engine will be changed, causing considerable extra labor and expense to get correct timing.

In reassembling care should be taken to have all nuts tight, the gaskets in good order, the cotter pins in place, etc.

Care of the Magneto.

The magnetos on all Sanford trucks are Bosch high-tension. This unit is located on the same shaft as the water pump and is driven from the timing gears. It is connected to the shaft by a flexible coupling and is easily adjustable to the firing order of the engine. The principal points where defects may develop are at the timer and breaker points. Fault at either is usually caused by dirt or lint collecting, which may be cleaned by opening the timer case, wiping it with a cloth moistened with gasoline and allow it to thoroughly dry before closing the cover. This precaution is to prevent fire in the timer when the engine is started. The points in the distributor case should be kept clean and free from oil and if dirty should be cleaned in the same manner as the timer.

In rare cases the pencil in the magneto may break. This is easily restored by inserting a new pencil or, if it should occur on the road, by inserting a piece of copper wire between the terminal over the collecting ring and the center of the distributor cover. Drilling a small hole in the center of the distributor cover will allow the copper wire to make suitable contact with the cover. This is only recommended in case of an emergency, however, or until a new pencil can be inserted.

In case of a magneto becoming demagntized about the only repair that may be made, if one is positive that the magnets have lost magnetism, is to replace the magneto with a new instrument.

The Fuel Intake and Exhaust.

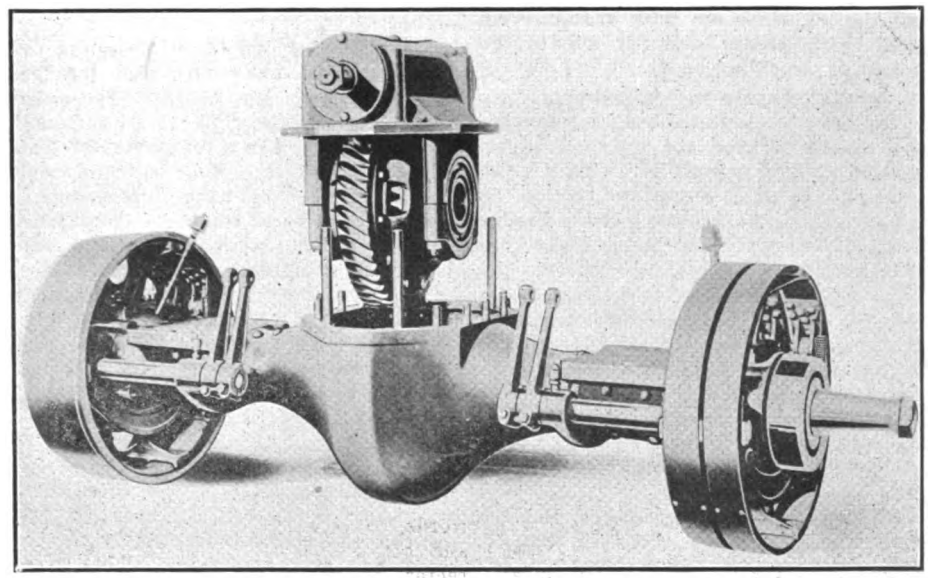
While examining and repairing the different units of the engine it is time well spent to make a careful examination of the gaskets of both the inlet and exhaust manifold. These may become loose and leak or blow out. A leak in the inlet manifold causes excess air to be admitted to the cylinders and causes the engine to run irregular. Make sure of these gaskets. Renew them if necessary and tighten the nuts of the manifolds securely. Be sure that the carburetor is securely fastened to the intake manifold and that the nuts are tight. Excess air admitted here will cause the engine to run irregularly.

The carburetor for all models is the Stromberg fixed jet type. While this jet is interchangeable for other sizes, it is usually set properly at the factory for each individual engine and rarely requires changing. Adjustment is made at the float and at the air valve. Adjusting these two will give satisfactory running conditions.

Clutch and Transmission Gearset.

The clutch for all models is the Borg & Beck dry plate disc and requires no lubrication except where a grease cup is fitted at the principal bearing. Care should be taken that oil does not come in contact with the plates, as this would cause them to slip. Adjustment is not necessary as the manufacturer claims that the clutch will adjust itself as wear takes place. However, if excessive wear develops, renew the worn parts.

The transmission gearset for all models is the Warner, affording four forward speed ratios and reverse on all models. The gear case should be drained of oil and washed out with gasoline or kerosene This will remove the sediment and clean it of oil. Examine the gears for burrs on the edges of the teeth, if any are burred remove the shaft the gears are on and grind the points on a carbor-



Standard Type of Sheldon Worm Semi-Floating Axle, with Differential Removed from the Housing, and the Shoes of the Double Internal Expanding Brakes.

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undum wheel to a bevel. Possibly they may be in such condition they must be smoothed off with a coarse file. Replace the shaft and the shifter forks in the case, making sure that the bearings are properly adjusted. As this transmission is ball bearing, provision is not made to take up wear. The only restoration is to provide new bearings for those worn badly. Some repairers claim it possible to rebuild bearings of this type so they will still be serviceable, but is not advisable where one wishes a first class job. The case should be refilled with steam cylinder oil or an oil with a heavy body to a height one inch below the main shaft.

Power Transmission System.

The universal joints of Sanford trucks are of two types, those at the rear of the transmission gearset on the propeller shaft being Spicer construction, while those between the clutch and transmission gearset are the Daimler type of flexible joints. Wear may possibly show where the flexible sections are bolted together to form a unit. If worn badly renew them.

The Spicer joints are enclosed and depend upon lubrication supplied at regular intervals. Remove the covers and examine them for wear in the joint. If these joints have been properly lubricated excess wear will rarely be found, but if they have been neglected it is quite likely they will be badly worn. Replace all worn parts with new and renew lubrication, fitting the cover securely in place.

The rear axle is the Sheldon semi-floating. The worm shaft is not adjustable. It is mounted in large annual ball bearings, the forward end floating. The worm shaft is in perfect alignment with the worm wheel at all times. The worm, worm wheel and the differential can be removed from the axle housing as a complete unit, by removing the nuts around the edge of the axle bowl, disconnecting the propellor shaft at the universal joint and lifting the unit with a block tackle.

Adjustments are not necessary to the worm wheel as the bearings are a double ball type and are non-adjustable. Draw out the oil, rinse out with gasoline and refill with steam cylinder oil to the height of the filling spout.

Brake Repair and Adjustment.

Examine the brake shoes by removing the wheels. These are removed by removing the hub cap, withdrawing the cotter pin, loosening the nut and pulling the wheel with a wheel puller. If the brakes are badly worn, reline them. Make sure that the rivets are well driven into the lining. To make sure that they are, countersink the holes for the rivet heads after the holes have been drilled through the brake lining. Lubricate the brake shackles below the shoes so that they will work freely. Replace the wheels on the axle and key them; replace the nuts, cotter pins and hub caps, making sure that all is tight.

To properly adjust the brakes, jack the rear wheels so they clear the ground. With a helper sitting in the seat try first the service brake. This is the pedal brake operated by the foot. Have the helper press down the brake pedal and try each wheel separately. If either wheel turns with the brake full on, adjust the rod on the side that the wheel turns till a point is reached where neither wheel turns and both wheels are locked. This should occur with the pedal about half depressed. The emergency brake is adjusted in like manner, till a point is reached about half way down the quadrant, where both wheels lock and neither turns.

Sometimes for slight adjustments it is found better practise to take up the rod running from the brake pedal or lever to the cross shaft ahead of the transmission. The equalizer will then compensate any variance. It will be found where brakes have been relined that it is necessary to again take up the brakes in a few days, as the shoes are uneven at first, and after a few days wear smooth.

Spring and Steering Gear.

The spring shackles should receive some attention during the overhaul, as they may wear considerably. The forward end of the rear spring takes the torque and propulsion thrust of the truck. These shackles require lubrication at stated periods and if neglected wear rapidly. Examine them for wear and if badly worn replace the pins or bushings, or both as requirements demand. The front spring shackles, like those of the rear springs, require attention. They should be examined and worn parts renewed.

The steering gear is a Ross make and is a combination of the worm and sector type combined with a rack and gear on the sector arm. That is, a worm on the steering post meshes with a sleeve that fits the worm freely. The bottom of the sleeve having teeth cut on one side that mesh with a large gear fastened to the sector arm shaft. This arrangement gives a steering gear that is very easy to handle and requires very little attention aside from lubrication. A double ball thrust takes care of the wear at the top of the worm. Adjustment is obtained by a clamp and nut at the top of the ball thrust. This adjustment draws the worm and sleeve into closer relation to each other.

It is good judgment while going over the truck to make sure that the front wheels are not out of line. The adjustment is simple and misalignment is easily corrected in a few minutes. Place the truck on a level floor with the wheels in line. With a string long enough to reach from back wheel to front wheel, place a weight at one end of the string and pass the weight around the felloe of the rear wheel rim. Draw the string taut along the line of the front wheel. Straighten the wheel till the string touches both sides of the front wheel rim and below the hub.

Change the string to the other side of the car, repeating the operation. When the string is tightened it will be found that the string does not touch both sides of the front wheel rim equally. In other words, the string will bear at one spot and not on the opposite. This is corrected by loosening the tie rod that passes beween the front wheels and either lengthening the rod or shortening it as the occasion requires. When the wheels are in line the string should touch equally at the two points on each front wheel.

Precautions After Reassembly.

In starting the engine after the overhaul it will probably be very stiff because of the tightened bearings, so it cannot be started by hand, and it may be necessary to tow the truck. Care should be exercised in doing this. Let the towing truck get some headway before attempting to start the engine of the towed machine. Use the high gear and let the clutch in easy at first. If all seems well let the clutch all the way in and start the engine. After it is started let it run for a time so the bearings will smooth. For several days after use an extra supply of oil in the crankcase till all danger of possible trouble from overheating is past, then the oil may be cut down to the regular quantity.

All chassis bolts and nuts should be tried for looseness and tightened securely. Wear and stress of the frame will cause noises that are disagreeable to the driver, but lubrication will largely suppress these.

MISSISSIPPI RIVER HIGHWAY.

The annual meeting of the Mississippi River Scenic Highway Association at Memphis, Tenn., Sept. 16, marked the real beginning of the campaign for construction of the proposed highway from New Orleans to St. Paul, Minn. This association has been incorporated for some months, but the detailed plans for raising funds, as well as for conducting an extensive publicity campaign, were not decided on until this meeting.

The aim of the association is to construct a hard-surfaced highway, readily traversible for every day in the year, from St. Paul to New Orleans. Federal, state, county, parish and municipal aid is to be invoked for the project. The Mississippi Valley Association and the Mississippi Waterways Association are assisting, as are also the branches and parent body of the Louisiana-Mississippi Automotive Trade Association, recently organized in New Orleans.

The new highway is to parallel the river. Beginning at New Orleans it will run up the east bank through Baton Rouge, Natchez, Vicksburg, Greenville and Memphis, and there will cross on the first passenger bridge to the west bank, thence continuing northward.

Motor car and truck owners and dealers from St. Louis to New Orleans are enthusiastically in support of this scenic highway.

MISSOURI VALLEY ROAD BUILDERS.

The Missouri Valley Road Builders Association has recently been organized at Kansas City, Mo., to include contractors, road material companies and county, state, municipal and federal engineers. The purpose of the organization is to establish closer co-operation and better understandings between these various interests.

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Nation Owns Nearly 7,000,000 Cars and Trucks

There is now one motor vehicle for every 15 persons in the United States. This statement is based on the latest authentic truck and automobile registration figures just compiled by the B. F. Goodrich Rubber Co. The Goodrich tabulation shows that the total number of trucks and passenger cars listed is 6,786,550. This represents a gain of 13 per cent. over the registration Jan. 1, 1919, which was 6,023,605. In other words, there are now in use 762,945 more motor vehicles than on the first of this year.

The State of New York outnumbers Ohio by only a few thousand, the figures being 502,785 and 480,000, respectively, but the records show that the latter state is increasing at a greater percentage than the former, and may step into first place by the first of next year. Next in the "big six" group, given in the order of their rank, are Pennsylvania, Illinois, California and Iowa.

Since the first of the year 15 states have made percentages of increase greater than the national increase of 13 per cent. These states are Ohio, California, Georgia, Virginia, Tennessee, North Carolina, Kentucky, South Carolina, Alabama, West Virginia, Louisiana, Idaho, Utah, Wyoming and Delaware. It will be noted that nine of these are southern states, and their percentage of increase as a unit is 22 per cent. Tennessee, West Virginia and Kentucky, in the order named, lead the South, as well as the entire country in percentages of increase. Unprecedented cotton and tobacco crops have placed this section of the country well to the fore. Since 1917 the census of automobiles in the southern states has increased more than 100 per cent.

In per capita ownership of cars, Iowa leads with a car for every 6.95 persons, and Nebraska is a close second with one car for every 7.01 persons, while Mississippi closes the list with one car for every 47.89 persons. The middle western states seem to be the center of per capita density of ownership. Ranking next in order to Iowa and Nebraska they are as follows:

South Dakota, one car for every 7.55 persons; California, 7.82; Montana, 8.84; Kansas, 9.09; Wyoming, 9.61; North Dakota, 10.09; Minnesota, 10.21; Michigan, 10.90; Arizona, 10.91; Ohio, 10.98; Indiana, 11.19; Wisconsin, 11.36; Colorado, 11.48.

Over one-half of the motor trucks and automobiles in the United States are found in 10 states, New York, Ohio, Pennsylvania, Illinois, California, Iowa, Michigan, Texas, Indiana and Minnesota. Each has a registration greater than 225,000.

One of the biggest motor truck parades on record was that held recently in Seattle, Wash., in connection with the ship-by-truck demonstration. More than 1100 trucks were in line and the calvacade was led by the governor of the state.

ELECTRIC TRUCKS MAKE LONG TRIPS TO EXPOSITION.

Two electric trucks which attracted unusual attention at the Electrical Exposition at the Grand Central Palace, New York, were the high-pressure fire engine of the Paterson, N. J., fire department and a five-ton vehicle which was purchased by a concern in Norway. These two trucks were run from their respective factories to New York under their own power, the fire engine covering 90 miles from Philadelphia, while the other vehicle made the 69-mile run from Danbury, Conn.

The fire engine is a high-pressure type and was purchased by the city of Paterson after tests that included speed, hill climbing, speed out of the station, mileage and general dependability. It is the 21st electric unit that the New Jersey municipality has in its fire department equipment. The engine is equipped with a chemical tank, carries a complement of ladders, has high-pressure connections and the necessary hose, and mounts a search light on the dash. It derives its power from an 80-cell battery and is driven by four powerful motors, one on each wheel. It has a speed of 22 miles an hour, and made the trip from Philadelphia at an average rate of 12 miles with two battery boosts, one at Trenton and one at New Brunswick.

The truck which is to be shipped to Norway is a five-ton standard chassis. It left Danbury in the morning and reached New York at 4 o'clock, having had one boost at Stamford. Another electric unit which attracted considerable attention was the 15-year-old veteran of a department store delivery fleet. With the exception of minor replacements it is the same vehicle that went into service in 1904. The first electric truck was built for B. Altman, New York City, in 1898, and was designed for package delivery.

NELSON'S CHIEF DRAFTSMAN.

W. B. Condit, formerly of the engineering staff of the Gramm-Bernstein Motor Truck Co., Lima, O., has accepted the position of chief draftsman for the Nelson Motor Truck Co., Saginaw, Mich.

Service Managers to Meet at Detroit Nov. 10-12

Realizing that no fundamental in the automotive industry is of such importance in uplifting and maintaining good will as is that of service, the National Automobile Chamber of Commerce has authorized the holding of a convention of service managers for two or three days at Detroit during the week of Nov. 10. At this gathering will be discussed many of the vital issues involved in the question of service—issues which are increasing in importance with the constant additions to the 6,500,000 motor vehicles already in operation throughout the country.

Specially selected speakers will address the convention and lead discussions which will vitally interest all members of the chamber and contribute to the solution of many questions of prime importance. Every service manager will have a chance to present his individual problems.

The service committee has selected a list of topics which it feels are the most vital and is asking the members of the chamber to indicate those subjects which they believe to be the most important to aid in making out a definite programme. The choice of subjects will be basic and will undoubtedly deal with many phases of service.

In connection with this convention plans are being made for a visit to the plants of several of the leading Detroit manufacturers.

FULTON GROUND GRIPPERS.

The Fulton Motor Truck Co., Farmingdale, Long Island, N. Y., has developed the Fulton ground gripper, which is designed to promote the wider use of motor trucks in direct transportation from fields to markets. The ground gripper requires little loss of time for application to the wheels and need not be removed when the truck passes from soft to hard ground.



Motor Transport Corps Caravan, Headed by Mack Trucks, Arriving at San Francisco After the Transcontinental Trip from Washington.

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LOCOTRACTORS IN SOUTH AFRICA

The importance of cheap and efficient transport for agricultural and other natural products in South Africa is claiming very much wider recognition now that farmers have been invited by the Union Government to increase their output and have demonstrated their desire to do this. At present, it is not too much to say transport arrangements are extremely bad in most of the country districts, and in some of them facilities of no kind whatever exist. As is well known, the road problem in South Africa is beset with many difficulties, says the British and South African Export Gazette. In the rainy season deluges scour and rut the tracks, and in the dry weather surfaces are rapidly disintegrated by vehicular traffic, and high winds get rid of the last vestiges of the "binding." Where any sort of a road exists it is possible, of course, for some kind of mechanical vehicle to negotiate it with the expenditure of sufficient time, trouble, and expense; but it is just this question of expense, taken in conjunction with delay, that makes it impossible for agriculturists and others to utilize such roads with any hope of deriving profit from their produce.

It is easy enough to call upon the gasoline-driven road tractor to come to their assistance, but unfortunately it can come only at a cost prohibitive to many. Mr. Frank Dutton, superintendent of motor transport South African Railways, gives figures to show what the cost of transport by the gasoline lorry works out at. A 3-ton gasoline lorry, with gas at 60 cents a gallon (a fair standard), will cost $20.68 per day to run. This sum includes wages, fuel, interest, depreciation, repairs, tires, and 10 per cent profit. The lorry could do 40 miles in the day—say, a return journey of 20 miles each way. If the lorry had to return empty, which would only too frequently be the case, the cost would be approximately 35 cents per ton-mile.

If a load were secured both ways—an improbable contingency—the cost per ton-mile would be 25 cents. Coal, salt, timber, and other low-priced commodities can not possibly stand a rate of more than 8 cents per ton-mile, and we know of no farm produce which in normal times could stand 35 cents or even 25 cents. It is true that traction engines, and tractors fitted with caterpillar treads instead of wheels, and, indeed, tractors of various types, have proved their utility in very adverse circumstances during the war; but in war expense is no object, and the cost of running these tractors could not be supported by any farmer or business man wishing to make his business pay.

The Light Railway and Its "Locomotive."

In the circumstances Mr. Dutton has advocated the light railway as the solution, and he appears to approach the subject from an entirely fresh standpoint. "Whichever way one turns to find means to enable these railways to be built on really cheap lines, it is the locomotive that bars the way," he says. "There is no way out of it so long as the existing type of locomotive is to be used." There are, it must be admitted, various serious disadvantages of the light railway as it is known at present, but the question of cheap railway construction would appear to be in a fair way to being solved if it were possible to apply suitable motive power to a train running on a railway built to the following specification: Rail section, 16 pounds per yard; gradients, 1 in 20; curvature, 50-foot radius.

And suitable motive power is now believed to have been definitely discovered in a locotractor, a special form of machine intended to take the place of the locomotive on pioneer light railways. This tractor, in which gasoline has so far been employed, but to which steam and electricity are equally applicable, was some time ago subjected to drastic tests carried out on a trial track, badly constructed by design, at Canada Junction, near Johannesburg, and through all these tests the locotractor is said to have come with flying colors.

It is difficult to convey the exact con-

Uses Both Rails and Road.

struction and the haulage and other possibilities of the new locotractor without recourse to illustrations, but such particulars as are available serve to show that the locotraction system uses trucks running wholly upon rails. The guiding portion of the locotractor also runs on the rails, but the driving wheels, shod with solid rubber tires, run on prepared strips of road metal on each side of the railway track; thus, for a given horsepower and weight, the hauling power is four times as great as with ordinary locomotives. Sharp curves, light track, and steep gradients are all one to the locotractor.

With these locotractors employed, it is calculated that light railways can be constructed for $3,850 per mile, against known South African costs of $12,000 to $20,000 per mile. With the new system, owing to the low cost of points and crossings and track, crossing places and sidings can be put in on a generous scale and at every farm, quarry, salt works, brickyard, factory, and plantation. There are various authorities who, like Mr. Dutton, advocate the new system with great enthusiasm and conviction, and it seems extremely likely that the locotractor, by rendering possible the cheap construction of the light railway, may go far to dispose of the difficulties that at present attend transport in the country districts throughout the Union and Rhodesia.

ELECTRIC TRUCKS IN DEMAND.

The distribution of electric trucks in New York has recently been in excess of that of passenger cars, it is stated, particularly to department stores and other concerns having delivery systems requiring frequent stops.

Electric trucks have been exported in considerable quantities to some of the northern countries of Europe, where the price of gasoline is so high as to limit the use of the internal combustion type of vehicle, but on account of the development of water powers, electric power for charging of batteries, etc., is cheap and easily secured. This field is cited as affording a gratifying market for this type of vehicle.

FACTS FROM NEW ORLEANS.

In "Duplex Doings," the interesting publicity sheet published monthly, under the auspices of the Duplex Truck Co., Lansing, Mich., E. R. Greenlaw of the Greenlaw Truck and Tractor Co., New Orleans, La., representative of Duplex trucks in that field, tells of the service of a Duplex truck in carrying hay in his vicinity. The load was baled hay carried on the truck and a trailer, and it was hauled 28 miles on 8½ gallons of gasoline. These figures become more significant when reduced to a ton-mile basis—the fuel consumption was .046 of a gallon or less than 1/20th of a gallon a ton-mile.

This number of "Duplex Doings" also tells and illustrates the feats performed by the Duplex trucks in the Burkburnett oil field near Wichita Falls, Tex., under the appropriate title of "A New Romance of the Oil Fields."

REGISTRATION FEES FOR TRUCKS.

New fees for the registration of motor trucks, commercial trailers and commercial motor vehicles used solely as such, have been put into force in Massachusetts, as follows: Capacity of one ton or less, $10; two tons and over one, $20; three tons and over two, $30; four tons and over three, $40; five tons and over four, $50; for any capacity over five tons, $50 for the first five tons and $10 for each additional ton or part thereof.

For all commercial trailers equipped with non-resilient metal tires, double the above fees will be collected, and for electric motor trucks and electric commercial vehicles used solely as such, one-half the above fees will be collected. All trailers must be registered, but the term "trailer" shall not include a pair of wheels commonly used as an implement for other purposes than transportation.

WRIGHT-MARTIN FAVORS CONSOLIDATION.

George H. Houston, president of the Wright-Martin Aircraft Corporation, says that practically all the stockholders of that corporation have voted in favor of the proposed consolidation with the International Motors Truck Co. The Wright-Martin Corporation, during the war, handled between $50,000,000 and $60,000,000 of government business.

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DEALERS' CONVENTION AT DENVER.

The National Automobile Dealers' Association held a four-day convention in Denver, Col., beginning Oct. 1, with delegates from all parts of the country in attendance. The principal objects of discussion were legislative reforms for the purpose of abolishing trade evils, organization and co-operation for betterment of the industry, and the need of highway development. The delegates put themselves on record as in favor of the Townsend bill now before Congress, which provides for a federal highway commission and federal supervision of highway construction, as well as the appropriation of $1,000,000,000 for highway improvement.

The last two days of the convention were spent in Estes Park, Colorado, 60 miles from Denver, where the closing business was transacted, and following that the party went on a motor tour through the Rocky Mountain National Park, which adjoins Estes Park.

While in Denver the delegates were entertained by Robert R. Hall, president of the Cadillac Motor Co. of Denver, and by the Denver Automobile Trades Association.

NEW BOOK ON MOTOR VEHICLES.

There has just been issued from the publishing house of D. Van Nostrand Co., 25 Park place, New York, "Motor Vehicles and Their Engines," ($2 net) a complete guide to automobile and motor truck care, repair and management, by Edward S. Fraser of the American Bosch Magneto Corporation and Ralph E. Jones of the Willys-Overland Co., both formerly instructors in the motor transportation course of the Coast Artillery school.

It is the authors' purpose to collect in a comparatively small book such elementary, theoretical and practical information as will assist in the operation, upkeep and adjustment of motor vehicles, and is designed to serve as a guide for the personal instruction of the car owner, as a hand book for chauffeurs, garages and repair men, and as a text book for automobile schools.

As the simplest language has been used and technicalities reduced to a minimum, and as the text is illustrated with numerous diagrams and sketches, it should appeal to any person in need of such a hand book.

NEW WILLYS CORPORATION.

It has been announced that J. R. Harbech, vice president of the American Can Co., is to be vice president and general manager of the new Willys Corporation, which is a consolidation of the Auto-Lite, New Process Gear and Duesenberg Motors Corporations.

HEWITT TO HANDLE SELDEN SALES.

R. V. Hewitt, a well known Pacific coast truck salesman, has joined the Enterprise Auto Sales Co., 228 North El Dorado street, Stockton, Cal., and will be in charge of Selden truck sales for that company.

ARMY MOTOR CORPS SHOW.

A unique automotive show is to be held under the auspices of the motor transport corps of the United States army, in the Ninth Regiment Armory, 14th street, New York, Oct. 16-18. Its purpose will be to present to the general public and particularly to those interested in motor mechanics and vehicles, the growth of the automotive industry and its accomplishments prior to and during the European war.

Practically every conceivable type of motor vehicle will be either on display, in contest, or in process of disassembling or assembling. It is also proposed to display every type of motor vehicle that was used in the war by the United States army, and many freak vehicles will be included.

Contests featuring the work of automotive vehicles and of the various branches of the motor transport corps will be held. There will be outdoor and indoor events, comprising dispatch riding, races, hill climb, endurance tests and competitions between units and individuals, including ambulance and women's motor transport corps vehicles. Prizes will be given to winners.

There is nothing commercial in this big exposition. Admission on the first day will be only by individual invitation, largely within the automotive industry, but Oct. 17 and 18 the doors will be open to everyone and admission will be free.

ONEIDA TO ADD ELECTRIC.

The Oneida Motor Truck Co., Green Bay, Mich., is to add a new electric motor truck to its line of motor driven products. At present the Oneida output includes five different models of gasoline driven motor trucks, ranging from 1¼ to five-ton capacity.

The economies effected by Oneida electric trucks under test by the American Railway Express Co. in conditions where short hauls are made, due to the elimination of starting and stoppage wastes, induced the Oneida company to add the electric model to its regular production.

LOSSES FROM LABOR TROUBLES.

An unofficial estimate of the losses in wages to workers and production losses to employers occasioned by strikes and lockouts and other labor troubles in this country since Jan. 1, 1919, places the former at $25,000,000 and the latter at $100,000,000, according to a statement recently made by G. C. Frey of the Kissel Motor Car Co., Hartford, Wis. He also calls attention to the opinion of business men in Great Britain that the recent railroad strike in that country caused a probable loss to the nation of $250,000,000. "I understand," he says, "that not only did the British government pay bills amounting to 1,000,000 pounds each striking day, but the loss to industry is far greater, in that perishable goods were destroyed, factories closed their doors and export trade was seriously affected.

Mr. Frey offers these instances as demonstrating the necessity for maintaining motor truck equipment and competent drivers in case of transportation tie ups, strikes and other troubles, which is a problem to which the industry is giving serious attention.

RAYBESTOS "SILVER EDGE."

To take up the campaign of co-operation between the manufacturer and dealer in marketing Raybestos products is the mission of "The Silver Edge," an attractive appearing house organ whose publication was inaugurated in September by the Raybestos Co., Bridgeport, Conn. It is replete with publicity suggestions and talking points to dealers, ranging from window displays to instructions concerning the use and application of the Raybestos products.

OSHKOSH BUYS FACTORY SITE.

Work is to be commenced at once on a new factory for the Oshkosh Motor Truck Co., maker of all-wheel drive commercial vehicles at Oshkosh, Wis. The first unit will be 150 by 300 feet. William A. Besserdich is president and chief engineer of the Oshkosh company.



Small Road Oiling Equipment Owned by Augusta County, Ga., Mounted on an Autocar Chassis for Road Repair Work.

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"THE GRID" ISSUED BY EDISON CO.

An attractive addition to the field of house organs published in the interests of automotive and allied industries, is "The Grid," which is to be published quarterly by the Edison Storage Battery Co., Orange, N. J. Its purpose is announced by the editors to be "to disseminate some sense and a little nonsense among users of storage batteries." The initial number bespeaks for "The Grid" a warm welcome whenever it makes its appearance in the industry.

Incidentally, it may be noted that the editors offer a prize of $50 for the best article or story submitted for each issue, and lesser amounts for other articles used, according to value. And a grand prize of $50 additional will be awarded to the writer of the best story used during the year. Technical articles, practical articles, articles of general interest, about improved methods in factory, shop and transportation will be acceptable, as well as articles about the particular product of the Edison company, the Edison storage battery.

A department of "Questions and Answers" will also be conducted, in which questions about Edison batteries, their use, how to care for them, their application in trucks, tractors, street vehicles, locomotives, etc., will be gladly answered.

FORD CO. NOW ENTIRELY FORD.

It is announced that all of the stock in the Ford Motor Cor. is now directly owned by Henry Ford and his son Edsel, through the recent purchase of the minority holdings of James Couzens, mayor of Detroit and formerly vice president of the Ford Co. It is understood that this deal included the transfer of over 2000 shares.

Interests of other minority stockholders were purchased by the Fords early in July for a sum said to be close to $100,000,000. Details of a proposed recapitalization of the Ford Co. have not yet been made public.

ST. LOUIS SHIP BY TRUCK DAY.

The mayor of St. Louis, Mo., has made a proclamation declaring Oct. 23 as the official ship by truck day in that city. The St. Louis Chamber of Commerce and the St. Louis Automobile Dealers' and Manufacturers' association are co-operating on the arrangements. There will be a big parade of commercial cars of every description, the purpose being to spread the idea of better hauling by quick moving motor trucks.

GOVERNMENT TRUCK SALE.

At a recent sale of condemned government army trucks at Philadelphia held under the direction of the motor transport corps, the average price paid was $660 apiece. The total number sold was 122 and the whole amount taken in by the government was $80,000. The trucks were in fair condition. Buyers were present from Minnesota, Florida, Illinois and nearby states.

WICHITA CO. LEASES MIDLAND FACTORY.

The motor truck manufacturing plant heretofore operated by the Midland Motor and Truck Co. at Oklahoma City, Okla., has been leased by the Wichita Motors Co., Wichita Falls, Tex., and will be operated in addition to the factory of the company last named at Wichita Falls. This will provide necessary increase in manufacturing facilities for the Wichita truck. It is expected that production will begin at the Oklahoma plant within 30 days and it is hoped that at least 2500 trucks of the 2½ ton and Oil Field Special models can be built during the next 12 months. Only three models will be built at Oklahoma City, one of 1½ ton capacity in addition to the two already mentioned.

The management of the Wichita Falls Motor Co. states that Wichita trucks are now in use in 68 countries outside of the United States, which it believes is the widest distribution of any truck manu-

TRAFFIC TO BUILD ANOTHER ADDITION.

The Traffic Motor Truck Corporation, St. Louis Mo., which recently built a plant with a capacity of 50 trucks a day, is now constructing an addition to its present plant at 5200 North Second street. The Traffic Corporation moved into the plant it now occupies last April, and this is the second addition made in the past four months. In May the machine shop was enlarged, but the demand for Traffic trucks has increased to such an extent that the present facilities are inadequate.

The new building will be brick, 150 by 200 feet, affording 30,000 square feet of floor space. The Traffic company claims to be the largest builder of a 4000-pound capacity truck in the world.

STRATTON-GRAMM-BERNSTEIN CONSOLIDATION.

The interest of G. W. Stratton in the Stratton-Gramm-Bernstein Truck Co., 1436-38 South Michigan avenue, Chicago, has been acquired by the Gramm-Bernstein Motor Truck Co. of Lima, O. The business will now be operated as a factory branch under the name of Gramm-Bernstein Truck Co. The company has reorganized with B. A. Gramm as president and A. M. Pierce as secretary-treasurer, and H. G. Metzler continues as manager of the sales end.

GOVERNMENT MAY BUY CURTISS PLANT.

A bill has been introduced in the National House of Representatives by Representative Kahn, chairman of the house military affairs committee, for the payment of the sum of $6,114,126.03 by Secretary Baker to the Curtiss Aeroplane and Motors Corporation to settle war contracts and to purchase the Curtiss company's plant at Buffalo, N. Y.

BETHLEHEM REPRESENTATIVES.

The Bethlehem Motors Corporation, maker of Bethlehem motor trucks, Allentown, Pa., has appointed the following representatives in various parts of the country:

Distributors:—R. L. Cameron Automobile Co., Dallas, Tex.; Roamer Motor Car Co., Huntington, W. Va.; Monroe Auto and Supply Co., Monroe, La.; Briscoe Motor Car Co., Montgomery, Ala.; Lucke Sales and Engine Co., Minneapolis, Minn.; L. E. Gallahorn Co., Reno, Nev.; Schneider-Merriman Motor Car Co., Springfield, Mo.

Sub-dealers—Overland Sales Co., Sumpter, S. C.; A. Gardner & Son, Ottis, Col.; M. Bouchard & Son, Caribou, Me.; J. W. Taylor, Keystersville, Mo.; Neo Desha Motor Co., Neo Desha, Kan.; Sea Coast Supply and Garage Co., Asbury Park, N. J.; Hoyt's Garage, Saugerties, N. Y.; Charles F. Gray, Kingston, N. Y.; Bryant O'Toole, Dobb's Ferry, N. Y.; Neave Motor Co., Huron, S. D.; Nebraska Elcor Co., Lincoln, Neb.; Ideal Motor Co., Fremont, Neb.; F. W. Wilmerding, Earling, Ia.; G. W. and C. W. Warren, Centralia, Wash.; J. F. Colson, Valdosta, Ga.; C. E. Connady, Chelsea, Okla.; Ponnder & Waller, Pawhuska, Okla.; Cherokee Motor Co., Knoxville, Tenn.; H. L. Fennell, Wilmington, N. C.; Craig & Wilson, Gastonia, N. C.; Parris Driver Co., Dunn, N. C.; Macon-Burwell Motor Co., Warrentown, N. C.

FULTON ADDS NEW MODELS.

The Fulton Motor Truck Co., Farmingdale, Long Island, N. Y., is to add two new models to its line of Fulton trucks. These will be a one-ton and three to 3½-ton sizes, and it is claimed by the sales manager of the company, C. M. Kraham, that these additions will enable Fulton distributors and dealers to meet the demands of practically the entire motor truck sales field.

It is also announced that on Oct. 1 the price of the Fulton model C truck was increased to $2350 f. o. b. Farmingdale. this increase being made necessary by general conditions regarding labor and cost of material.

A. O. SMITH CORPORATION EXPANDS.

The A. O. Smith Corporation, one of the largest manufacturers of pressed steel automobile and motor truck frames in the world, has issued bonds to the amount of $3,300,000, for the purpose of enabling it to satisfactorily handle its greatly increasing business. The Smith corporation has recently made contracts to supply the General Motors Corporation with a majority of its frame requirements.

BRUSH JOINS SALES FORCE.

The Welling Motor Co., St. Louis, Mo., distributor of Olympian, Crow-Elkhart and All-American trucks, has added to its sales force George I. Brush, formerly district sales manager for the Olympian Motors Co., Pontiac, Mich.

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(Continued from Page 433.)

the form of a smoke talk in the garage of Lars Bogarson. The farmers present apparently had a definite purpose, and plied the chief speaker with pertinent questions.

Sleepy Eye, Minn., Sept. 21—The cara van left Tracy at 7:30 a. m., with the exception of the Service, Clydesdale and Republic trucks, which had arranged for a little demonstration hauling before proceeding. The Service hauled two loads of fodder on the farm of F. Mirck, Tracy, from field to ensilage cutter 1.8 miles round trip; the Clydesdale hauled one load for the same man and the Republic two loads, two tons each.

This place was reached at 11:10, the mileage being 32, but a halt was made en route at Lamberton, where the Jackies gave a band concert and a few informal speeches were made.

After lunch at Sleepy Eye the trucks engaged in demonstration hauling until evening, when a meeting was held, Harvey Luckett of Masters Trucks, Inc., being the chief speaker. The afternoon work was as follows: Sterling—Hauled 5180 pounds of coal from Farmers' coal elevator to Albion creamery at Sleepy Eye, 20 miles round trip. Signal—Hauled a load of rye from farm of E. McGowan to elevator in town, 17.1 miles round trip. Diamond T—Hauled three cows, weighing 3500 pounds, from farm of A. A. Becker to slaughter house in town, 12.5 miles round trip Selden—Hauled 14 hogs, weighing 2250 pounds, from farm to slaughter house, 22 miles round trip. Atterbury—Hauled two cords of maple wood, 4200 pounds, from farm to town, 25 miles round trip. Hawkeye—Hauled rye from farm of Ed McGowan to elevator in city, 16 miles round trip.

It was reported that some 600 or 800 farmers in this vicinity became vitally interested in the pneumatic tired trucks because of the visit of the tour here, and the truck industry will undoubtedly be greatly benefited.

After the somewhat strenuous activities of several weeks past, the tourists were glad to take a day off here today. There were, however, fishing excursions and trips in cars and on foot out into the beautiful country surrounding this town.

Sleepy Eye to Mankato.

Mankato, Minn., Sept. 22—The tour got away from Sleepy Eye promptly at 8 o'clock and arrived at New Ulm, 15 miles further on, at 8:50. This is a rich business city and should afford a good field for truck sales. The local dealers were, however, somewhat lukewarm at first under the apprehension that the tour came to absorb all the local sales possible to the detriment of the local men, but when it was explained that the purpose of the propaganda was not in any sense to make sales, but only to stimulate the use of trucks generally by farmers, their attitude underwent a change. There were probably some 400 farmers around the machines during the stop in New Ulm, and many questions were asked that indicated deep thought on the matter of motor trucks and a predisposition in their favor.

Mankato, the night stop, was reached at 3:05 p. m., the mileage for the day being 43. Mr. Kroh put across his story, with its special message to the truck dealers, business men and bankers, at a banquet at the Heinrich Hotel, and later talked to the farmers in the street. This was thought to be a good place for some effective follow-up work.

Headquarters at University Farm.

Minneapolis, Minn., Sept. 24—During the several days the tourists were in Minneapolis, St. Paul and vicinity, the trucks' headquarters were at University farm. Leaving Mankato at 8:05 a. m., LeSuer was reached at 9:30, where lunch and a short talk made up the programme. Minneapolis was reached at 3:50 p. m., the day's run from Mankato being 50 miles.

The events of the day here consisted of a parade at noon, and a banquet at night, which was the biggest meeting of the entire tour. This was sponsored by the Motor Trades Association of Minneapolis, and over 450 dealers and distributors from this city and vicinity assembled at the West Hotel. Toastmaster Graham of the Motor Trades Association introduced as the first speaker Mayor Meyers, who spoke of the motor truck in relation to transportation on the farm, and touched especially on service. "Service," he stated, "is the keynote of success to the farmer. If you render him honest service by first recommending the proper truck for his particular need and then see that he receives all possible aid and advice after you have sold him the truck, you will make a big success of your business."

Other speakers were A. E. Schafer, sales manager of the Gramm-Bernstein Co., whose topic was "The Relationship Between the Dealer and the Manufacturer;" M. J. Dowling, the Olivia banker, who until recently has been in France, Belgium and England engaged in rehabilitation work and spoke with authority on the business problems of the farmer; Capt. Mitchell of the transportation corps of the United States army, who detailed the big things that had been accomplished with motor trucks in the army, both at home and abroad; William Reese, advertising manager of the Sterling Motor Truck Co.; Senator Wilcox on "Organization," which was one of the illuminating talks of the evening, and A. H. Kroh, the official lecturer, who presented the objects of the tour.

County Fair at Faribault.

Owatonna, Minn., Sept. 26—Thursday, the 25th was taken up by special demonstrations at University farm, interspersed by a parade in St. Paul at noon.

Leaving Minneapolis this morning at 10:15, Owatonna, the next night stop, was reached at 6:30 p. m., the mileage being 70. A heavy wind raised huge clouds of dust and made the trip disagreeable. En route stops were made at Farmington and Faribault. The latter place was reached at 2 o'clock and the tour was particularly fortunate in striking here a county fair which had brought to town thousands of farmers. Mr. Kroh spoke to one of the largest audiences that was reached during the entire trip.

A train of trucks convoyed the tourists into Owatonna, under the direction of Mr. McGregor, a wholesale grocer.

Two Days at Winona.

Winona, Minn., Sept. 28—The trucks left Owatonna at 7:30 a. m., arriving at Rochester, where the famous hospital of the Doctors Mayo is located, at 10:30, the run being 44 miles. Here a dinner was served in honor of the tourists, after which Dr. Mayo introduced Mr. Kroh, Lieut. Willson and Capt. Mitchell. Mr. Luckett of the Masters Trucks, Inc., spoke at the Mayo Brothers park and the Naval band played.

Winona, the night stop, was reached at 5:15 in a drizzle of rain, the total mileage for the day being 93 miles. Mr. Kroh made the principal address in the evening and the audience, made up of farmers and citizens, were particularly interested in the moving pictures depicting just what the trucks had done up to that time.

Sunday, the 28th, a banquet was given here by the Winona Automobile Association. Mr. Kroh spoke and the bankers and business men present evinced a keen interest in his talk.

Going Over Into Wisconsin.

La Crosse, Wis., Sept. 29—The caravanists got away from Winona at 10:25 a. m., arriving at this city at 1:45 p. m., the distance traveled being 41 miles. Several of the trucks carried loads of flour from the Bay State Milling Co., Winona, to this city, the Atterbury having 4400 pounds, the Maxwell 3400, the Winther 4000 and the Bethlehem 4000. The roads were not so good on account of the recent rains. A short stop was made at Galesville.

At the meeting here tonight dealers, bankers and citizens were well represented.

La Crosse to Madison.

Madison, Wis., Oct. 1.—La Crosse was left behind at 7:45 a. m. for Reedsburg, 90 miles distant, a short stop being made en route at Bangor. The heavy rain and hilly topography of the country put the trucks to a severe test. The arrival of the train at 4 p. m. made the tour the latest it had ever been, four hours. After lunch here the trucks got away for Elroy, where the caravan was admonished not to proceed further as all automobiles attempting it returned to town to wait until the road had dried off. However, as arrival in Milwaukee was scheduled for Oct. 3, there was no time to think of impassable roads, so the machines floundered on through mud to the hub caps and the darkness did not improve the situation.

Reedsburg was reached at 2 o'clock this morning. After assisting in a home coming celebration, the cavalcade got away at 11 o'clock. Baraboo had been scheduled as a night control, but the tourists proceeded to this city, which was reached at 5:30 p. m. The total mileage from La Crosse to Madison was 150. On account of the lack of interest on the part of the dealers the meetings staged for the evening was not held, but Mr. Kroh addressed a party of citizens and explained the tour's position.

A Good Meeting at Janesville.

Janesville, Wis., Oct. 2—Though the tour was not due to leave Madison until noon, the start was made at 9 o'clock on account of the lack of interest displayed

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at the state capital. The arrival here was at 12:55 p. m., and the mileage was 42. The evening meeting was a big success, it taking the form of a banquet at Myer's Hotel. The mayor presided and there were present, in addition to the tour members, bankers and local truck dealers. An open air meeting was held after the banquet, which was also well attended.

Reaching the Goal.

Milwaukee, Wis, Oct 4—Yesterday was the last day on the road An early start was made from Janesville and by noon the 55 miles to Waukesha had been negotiated, and after a luncheon at that point the party proceeded on the remaining 17 miles into Milwaukee. At the Harley-Davidson factory a stop was made and the thanks of the tour management were extended for the services of Harold Hoyt and his Harley-Davidson motorcycle and side car, which had been used throughout the trip as official courier.

The reception in the evening at the Athletic Club, where a banquet was given by the Association of Commerce and the Motor Trades Association, was particularly enthusiastic. The speakers were: A. C. Van Scoy, president of the Association of Commerce; William George Bruce, general secretary, Association of Commerce; Frank G. Cannon, secretary, Good Roads Association of Wisconsin; Senator Roy Wilcox of Wisconsin; J. E. Tracy, president, National Association of Motor Truck Sales Managers; W. P. Stewart, United States weather bureau; Capt. Mitchell, Motor Transport Corps; Lieut. Willson, United States navy, and A. R. Kroh, tour director.

The events of the last day began with a parade participated in by many trucks entered by local distributors. At noon the National Association of Motor Truck Sales Managers gave a farewell dinner to the personnel of the tour. President Tracy spoke feelingly of the great good that had been accomplished and of the loyalty of those on the tour. In behalf of the National Association, Mr. Tracy then presented Mr. Kroh with an elegant gold watch; Tour Master D. M. Scott received a gold and silver cigarette case, and Charles Smith was given a fine traveling bag.

And thus ended the 3000-mile National Truck Development tour to prove motor truck efficiency, and the fact that it went through according to schedule is the strongest kind of prima facie evidence of the dependability of the motor truck.

ELECTRIC TRUCK VETERANS.

That the electric truck is good for long years of service was convincingly shown by the automobile bureau of the New York Edison company in an exhibit at the electrical exposition recently closed in New York. The number of trucks of all ages that were in service on Jan. 1, 1919, was shown on a statistical chart, and two trucks, one with a 16-year service record and the other with a 14-year record, were on view. The former veteran was a lamp wagon used for delivery purposes by the electric light company, and the latter was lent to the exposition by Aitken Son & Co.

The statistical chart showed that there are now 2044 electrics that have been in service for at least five years; 980 eight-year olds; 221 in the 10 year class; 106 that are 13 years old; 33 that have seen service for 15 years; 25 for 16 years; 11 for 17 years and two for 18 years.

The display of electric vehicles at the exposition included a fire engine, passenger cars, industrial trucks, a tractor and storage batteries.

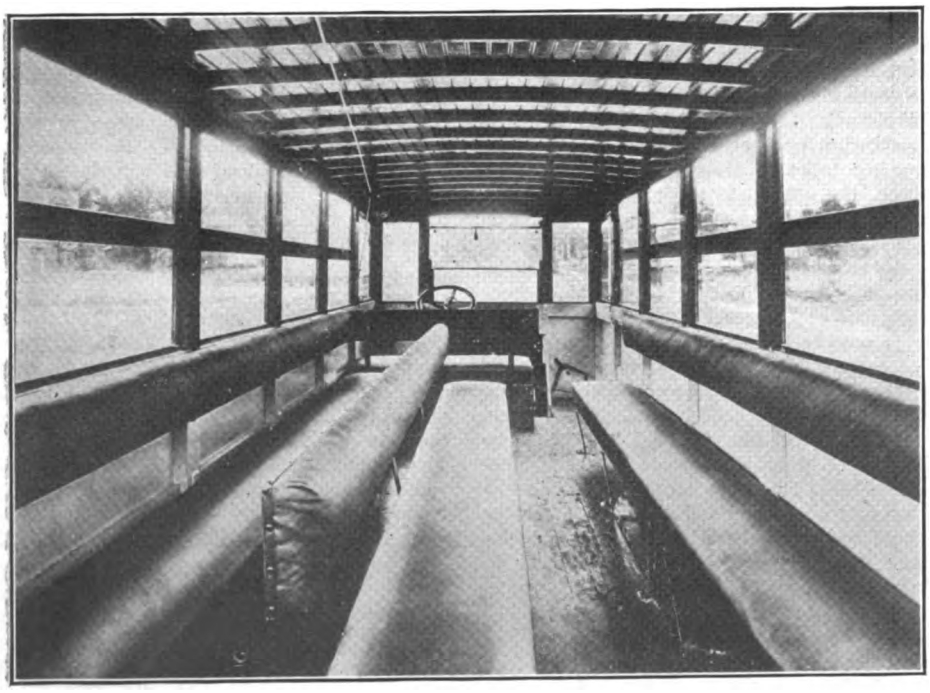
SALE OF CONDEMNED VEHICLES.

The first sale of condemned government motor vehicles by the motor transport corps, held at Camp Holabird, Baltimore, Md., brought a total of $12,027 for 58 motor cars, five trucks, eight motorcycles and five side cars.

At the second sale at the same place, Sept. 25, 28 trucks and eight ambulances were disposed of.

SMITH JOINS WINTHER.

George Drake Smith who for the past three years has been manager of the commercial wagon department of the Edison Storage Battery Co., Orange, N. J., has joined the Winther Motor Truck Co., Kenosha, Wis., as assistant to the president.



The Longitudinal Seats and the General Arrangement of a Special Body on a Kissel Truck Chassis, Used for Transporting High School Pupils at Denver, Col.

LONGER ARMS ON MIRRORS.

The Massachusetts highway commission finds that a good many owners are complying with the letter rather than the spirit of the law recently enforced requiring mirrors to be placed on all motor trucks. The commission finds that a good many truck owners are not using any judgment in attaching the mirrors in such a way as to carry out the intent of the law. The commission's inspectors observe that a good many very heavily loaded trucks on very wide bodies are equipped with a very short arm on the mirror, the result being that the operator cannot see the road in the mirror any better than if he had no mirror at all. The commission insists that the truck owner must see that the arm on the mirror must be long enough so that the mirror will project beyond the width of the truck and show the road to the rear. It may be necessary to have a two-foot or longer arm on certain trucks to comply with this provision, and an 18-inch arm on many trucks.

CRUDE PETROLEUM FIGURES.

The United States geological survey states in its summary of crude petroleum statistics for August, 1919, and preceding months, that the quantity of crude petroleum run from wells and producers' field storage tanks and delivered to pipe lines, marketing companies, refineries and other consumers in the United States in August, 1919, amounted to approximately 33,986,000 barrels, an increase of 465,000 barrels, or 1.4 per cent. as compared with July, 1919, the preceding record month, and 3,341,000 barrels, or about 11 per cent., compared with August, 1918.

TANK HOLDS 2500 GALLONS.

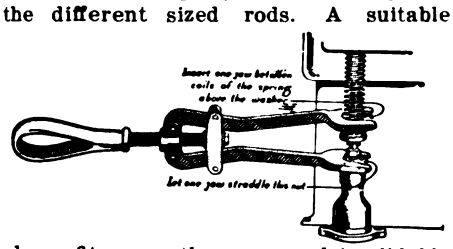
What is said to be the largest tank truck in the United States has been delivered by the International Motors Co. to the Texas Oil Co. in St. Louis, Mo. This tank has a capacity of 2500 gallons and is mounted on a 7½-ton Mack chassis with 40 by 14-inch solid tires.

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Garage and Service Station Machinery, Tools and Equipment

VICHEK SPRING COMPRESSOR.

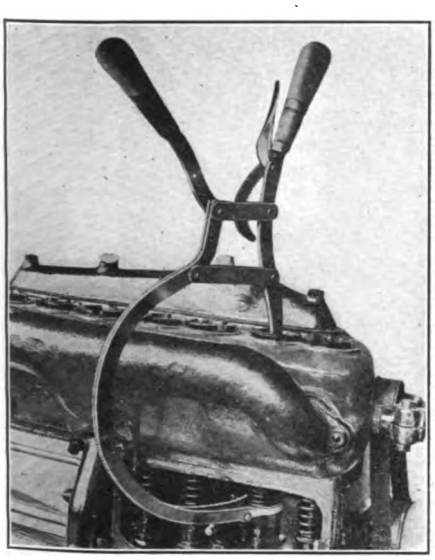
The Vichek Tool Co., Cleveland, O., is manufacturing the Vichek valve spring compressor that is simple in operation and designed for use on either truck or automobile engines. The tool consists of two arms hinged at one end to a special threaded plate. The free ends are forked, to take the valve stem and the push rod. These ends being adjustable sideways for the different sized rods. A suitable



clamp fits over the arms and is slidable by means of a threaded bolt passing through the threaded center and fastened to the clamp. To operate the compressor one fork is placed around a valve stem, below the spring, and the other fork around the push rod. Turning the bolt to the right forces the forks apart, compressing the spring, so the pin in the stem can be removed.

PERFECTION VALVE SPRING COMPRESSOR.

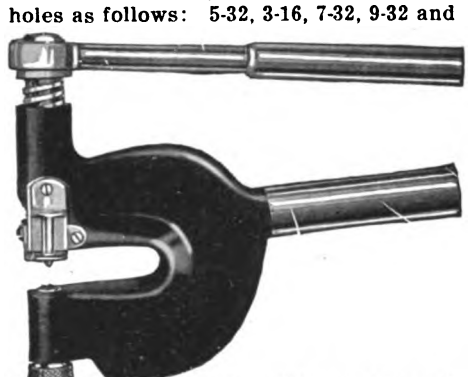
The Mapson Manufacturing Co., 622 E. Eighth Street, Los Angeles, Cal., manufactures a valve spring compressor known as the "Perfection" for use on L and T head engines. The tool is adjustable to any size stem and consists of a long arm that passes out and around the engine to the top, where it is securely



held by two hinged joints, the upper end terminating in a handle. The other arm has a pointed end that centers in the head of the valve, the upper end joining the first member at the hinged fastenings and terminating at the top in a handle. A ratchet and release are provided so that the operator may hold the spring in the compressed position as long as desired. Releasing the ratchet frees the arm and allows the spring to assume its natural position. The device is powerful enough to compress the springs of heavy truck engines. A special Ford compressor is also manufactured.

JIFFY SPEED PUNCHES.

Paul W. Koch & Co., 19 S. Wells Street, Chicago, Ill., manufactures the "Jiffy" speed punch for the tool kit of the repairer and the service station. The "Jiffy" speed punch is a powerful, compact tool for punching holes in sheet metal up to 10 gauge thickness. It weighs five pounds and is 9½ inches long. It works in small space and will punch holes as follows: 5-32, 3-16, 7-32, 9-32 and



¼ inch, requires little oiling and no adjusting.

The punch is held and operated by hand and may be carried from job to job, or fastened in a vise. The punches are crowned, of a floating type, directing the power to the center. Claim is made that the punch will not twist or turn while in operation and will not leave a burr on the metal after the hole is made. The Jiffy punch handles are short and the operator is close to the work. A half turn of the lever only is required to drive the punch through metal. The punches and dies are easily changed from one size to the next. "Jiffy" punches are fully guaranteed. The "Jiffy" speed cutter for cutting holes in metal is also manufactured.

VALVE SPRING COMPRESSOR.

The U. S. Compass Co., Cedarburg, Wis., is making a very convenient tool for service station use for removing engine valves. The tool consists of two arms joined at the top by two hinged



joints and operated by a bolt and wing nut. The lower end of the bolt is secured in the center of two short lengths of steel by a rivet, the outer ends of the rods being fastened to the arms in the form of a hinged joint. To operate the winged nut is turned to the right, compressing the valve spring and allowing the pin or key to be removed. The jaws of the compressor are adjustable so it may be fitted to any size valve from 9/16 to 1¼ inches.

RAYBESTOS BRAKE LINING KIT.

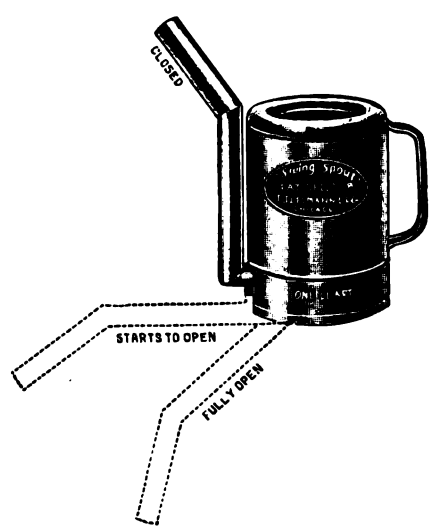
The Raybestos Co., Bridgeport, Conn., manufactures, an attaching kit consisting of a supply of the proper size rivets and the necessary tools, instructions, etc., for attaching Raybestos brake



lining to the brake shoes of automobiles and trucks. The kit is supplied in a neat wooden box, having each article in a separate compartment. The instructions are very explicit and besides showing each step in applying the lining, tells which tool to use and how to use it in completing the work.

SWING SPOUT OIL MEASURES.

E. Edelman & Co., Chicago and New York, is marketing a swing spout oil measure with a patented spout that closes and stops the flow of oil when in a vertical position, but from which when partially or wholly lowered the oil flows freely. It is made in one and two quart sizes, of heavy material that will stand



hard use. The spout has a patented shut off or valve with a ground fitting so that oil cannot leak, and is a length suited to

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supplying oil to filling spouts not accessible with other type spouts.

The swing spout oil measure is guaranteed to the jobber in that if he buys a reasonable quantity and cannot sell them within 90 days, at the expiration of that time he may return them and receive his money back.

WEAVER AUTO OILER.

Weaver Manufacturing Co., Springfield, Ill., manufactures a new self-measuring type oil can for service stations. The measure has a handle for carrying and a special delivering spout for the passage of the oil to the engine. With this device the service station repairer can deliver oil without waste and accurately measure the quantities of oil supplied.

The spout is heavy brass and is ad-

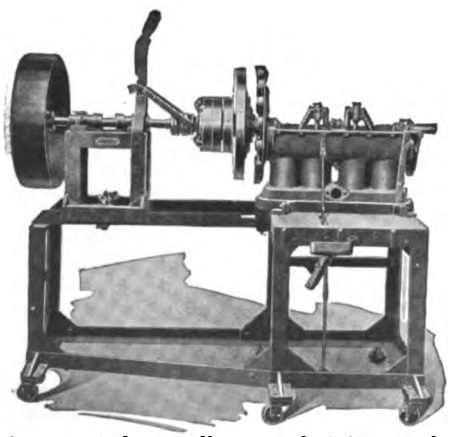


justable to deliver oil at any angle. The oil is released from the container by a button located conveniently to the thumb of the operator. A slight pressure releases the oil and removing the pressure shuts off the flow, the spout automatically draining itself.

The volume discharged is accurately shown by a direct float gauge operating within a graduated brass tube. The height of the tube is adjustable and the figures may be read from either side. The Weaver auto oiler is constructed from heavy galvanized iron and has a capacity of two gallons.

F & M BURNING-IN STAND.

The Hasting Manufacturing Co., Hastings, Neb., manufactures the F & M burning-in stand, engine work bench and differential stand in one unit. The stand



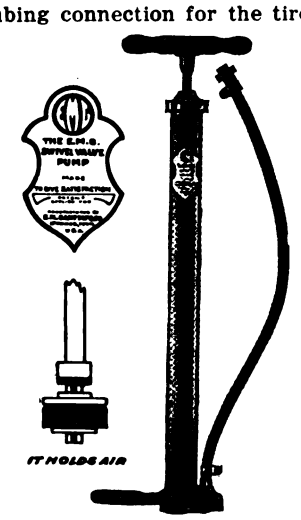
is mounted on rollers so that it may be moved easily when loaded and when empty can be carried by two workmen. It is made from angle iron bolted and riveted and well braced. It may be placed in front of a chassis when an engine is to be removed, the engine placed upon it and fastened, the stand and engine moved to the work bench, connected to the power and the bearings burned-in.

In work of this nature the stand is rigidly held to the floor by a special fastening and the engine is secured to the stand. Such work as testing magnetos, fitting pistons to cylinders, and, in fact, all necessary engine work may be done while the engine is on the stand.

For differential repairs, special brackets are placed at one end of the stand and a drip pan for the oil, so repairs may be made quickly and easily without the repairer moving from a standing position. The manufacturer claims the stand is a time and labor saver and with it more and better work may be turned out in a given time.

E. M. G. SWIVEL VALVE TIRE PUMP.

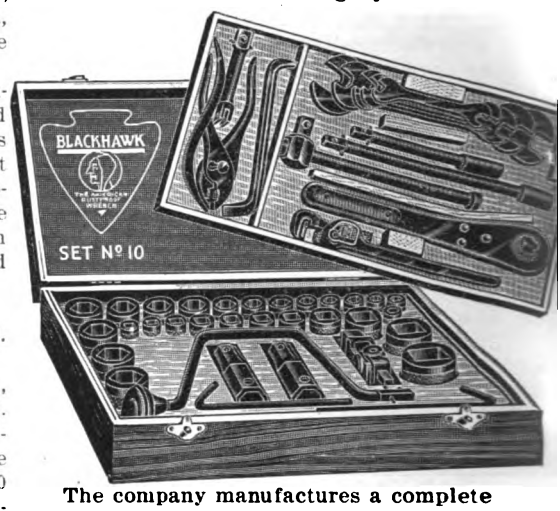
E. M. Gant Manufacturing Co., Inc., Ethridge, Tenn., manufactures the E. M. G. Swivel Valve Tire Pump, which consists of a single cylinder of 16-gauge steel tubing, 1¼ inches diameter and 20 inches long, screwed into a heavy malleable iron base that is fitted with a folding foot rest. The plunger rod is heavy cold rolled steel with detachable handle. The tubing connection for the tire valve



is 24-inch reinforced fabric rubber with screw connection to fit any tire valve. The pump is finished in baked green enamel. The pump is 24 inches over all It has an extra heavy oil treated leather cup on the plunger and a special air valve on the side of the plunger rod insures a full pump charge of air at each stroke. The plunger head rides straight from the top to the bottom regardless of any turning movement of the handle.

THE BLACKHAWK COMBINATION WRENCH SET.

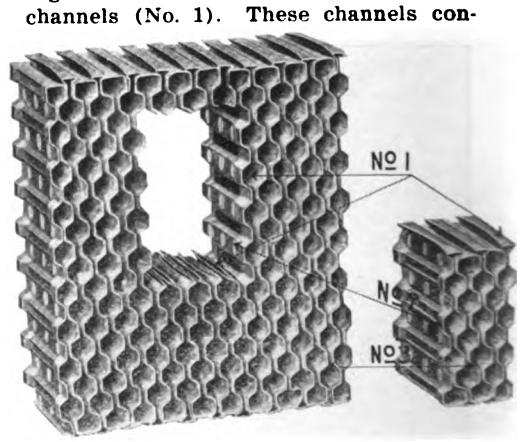
The American Grinder Manufacturing Co., Milwaukee, Wis., manufactures the Blackhawk Combination Wrench set containing all tools necessary for repairing or overhauling work in a garage or service station. The set consists of a nine-inch ratchet, two extension bars, pipe wrench, brace wrench, universal joint, two spark plug sockets, five open end thin wrenches, pliers, combination tee and offset handle, double end screw driver, valve grinding attachment, cotter pin puller and 16 hexagon sockets; sizes, 7-16, ½, 9-16, 19-32, ⅝, 11-16, ¾, 25-32, 13-16, ⅞, 15-16, 31-32, 1, 1 1-16, 1⅛ and 1¼ inches, and 11 square machined steel sockets, sizes, 7-16, ½, 9-16, 19-32, ⅝, 11-16, ¾, 25-32, ⅞, 1 1-16 and 1 9-32. The case is a heavy wooden box, with hinged cover and finished in mahogany.



The company manufactures a complete series of wrenches of all kinds for automobile and truck repairers, including Ford sets of various assortments, Buick, Cadillac, Cole 8, Chalmers, Chevrolet, Dodge, etc., covering practically all of the principal cars. These tools may be purchased in set form or separate as desired. Prices vary from $18 for the set described to smaller sets selling as low as $3.

WABASH HONEYCOMB RADIATORS.

The Wabash Auto Radiator Manufacturing Co. 1117 Wabash Street, Chicago, Ill., manufactures Wabash honeycomb radiators, the main feature of which is the large cooling capacity. This is obtained by the arrangement of the corrugated brass sheets forming the water channels (No. 1). These channels con-



tain small pockets, largely increasing the water capacity of the radiator (No. 2). In this construction the length of channels in which water must flow from the inlet to the outlet connection is increased, prolonging the time the water must contact with the radiating surface.

The Wabash core contains no dead channels, or so-called dead tubes, every channel containing water. Each channel is constructed of only one layer of brass. Air rushing through the roomy air passages (No. 3) between the channels, diffuses the heat rapidly.

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(Continued from Page 444.)

what types and size in the judgment of the salesman are the best suited for the work done with the trucks.

Truck Tires Seldom Large Enough.

Practically every truck manufacturer equips his machines with tires that are recommended for the weights of the chassis, body and load within certain limitatons, and generally, because large tires cost money, no provision is made for excessive loading. That is, there is no large factor of safety in tires. If the tires are stressed beyond the point of endurance by overloading they are quickly destroyed, and a single overload, hauled but a short distance, may be the cause of rapid wear. If the tires are larger than what would be recommended for a given type of vehicle and weight, the probability of destruction is reduced, as the tires are increased in size.

Fast driving has practically the same effect as overloading, especially if the drive is for a long distance with few or no stops. The condition of the road driven over is a third factor of importance. The care of the driver is another element. If the driver starts with harsh engagement of the clutch, if he accelerates his truck quickly and if he applies the brake sharply the wear of the tires will be excessive as compared with easy clutching, careful acceleration and gradual braking.

The tire that will endure overloading and the other conditions that have been specified must necessarily be larger and will cost more money than those of the truck will of the average factory equipment. Trucks will be sold with any size tire required by a buyer, but with rare exceptions what is known as standard equipment is accepted without regard to conditions because of the first cost, and often this assumed saving is extremely costly, for the difference in price might mean a very largely increased tire mileage and without the losses of the time of the truck for making changes.

Owners Only Consider First Cost.

The truck is sold by the manufacturer as a rule without making provision for exceptional conditions that could result in rapid wear of tires, but the tire salesman ought to know the uses made of the machine and have exact knowledge of the needs and be able to advise the owner. Truck owners will usually endeavor to obtain the last mile possible from tires and will use what good judgment would dictate discarding with the belief they are economizing. When a tire is worn so thin that, as compressed under a load it has no cushioning effect, all shocks are communicated to the mechanism of the machine and rapid mechanical wear follows. There are some conditions, as when driven on smooth asphalt, when the tires can be worn until the flanges of the rims or bases contact with the surface, without damage to the machine, but such roadway is not common

The average truck owner will wear tires until they are in ribbons or so thin that the machine is being badly pounded and will demand of a service station that new tires be installed without loss of service time, expecting that his patronage is worthy of the entire facilities being devoted to his work whenever it is offered. This demand is practically the same and for that reason there is necessity of having an organization in a station of this kind that will do work as expeditiously as possible, but do good work.

Careful Work Is First Purpose.

In the Feltham station no endeavor has been made to establish records for removing and putting on tires, but the purpose is to do the work as rapidly as is practical. Whenever possible notice of tire changes are asked for, so that there shall be plan made for handling it with the least delay. As a rule from 20 to 25 minutes is required for taking off and putting on a front tire, and approximately an hour for a rear tire of dual type.

When a truck is brought in for work the driver is instructed to remove the wheel that is first to be worked on, if more than one tire is necessary, and bearings are not removed by the shop workers unless the driver or the owner is present. The wheel removed is put on to the press and the work of removal continued as the press is operated, so that there shall be no cessation of press operations as long as these are necessary. After the tire has been taken off the wheel is examined and the condition noted.

Condition of Wheel Is Important.

If the tire is solid and the wheel is not in need of repair the new tire is put on, but not infrequently a wheel will be found in such condition that it may be dangerous to use. The owner is notified and if he sanctions the work a new wheel is taken from stock, the hub and bearings of the old wheel fitted, and the tire put on. This gives the owner practically a new wheel and the cost is low because the work is done in connection with the tire installation. Were this done separately the expense would be considerably more and the loss of service time would add materially to the charge for the tire and tire installation. There are instances, of course, where more or less fitting is necessary, but if the hub is a standard type, with the shop facilities the change can be made very quickly.

In the event that larger tires are to be put on the wheels must be adapted for them and various works are necessary, such as putting on new wheel felloes, new S. A. E. bands, felloe extensions and other means of fitting the wheel and tire. If the change is to be made from solid tires to pneumatics the diameter must be reduced and the spokes cut off and a new felloe made. This work is done by machine and the time is minimized.

Some Obstacles to Fitting Tires.

All sorts of conditions are met in fitting the tires, for occasionally the wheels will need trueing, the felloes may not be to standard dimensions, or the felloe is to be beveled so that the tire base will not have a solid seat the entire width. In such instances the tire installation requires more time and not infrequently there may be necessity of building the felloe diameter with shims or layers of burlap so that the tire will be firmly retained on the wheel.

Some trucks are equipped with steel or malleable iron wheels, which are hollow, and the handling of these must be with equal care to insure the fit of the tires. Instances have happened where the tires have been exceedingly difficult to take off because of irregularity of the rims, which have been dinted through the rubber and the tire bases from contact with an immovable object. Great pressure is necessary to force the tires off, and there may be need of cutting the bases, and before the new tires can be installed the rims must be restored. In some instances this is done by making patterns and forming metal plates to fit the depressions, which are brazed on. The rims cannot be restored by trueing, and they cannot be subjected to great heat. The plates must be immovable and for that reason a bad dint may necessitate a great deal of work that was not apparent before the wheel was off, but is obviously imperative. The great stresses to which tires and wheels are subjected can be realized when a wheel rim may be dinted through from 1½ to three inches of rubber compound and a ⅜ inch steel tire base.

Results of Mechanical Neglect.

Practically every tire installation has some condition where careful judgment is necessary. Not infrequently the wheel spindles or axles are bent, tire rods and spindle pivots worn, wheel bearings loose, wheels out of true, and similar conditions that will cause excessive wear on the tires, and misalignment of wheels is not uncommon. Restoration is necessary if the tires are to be kept so as to give good mileage.

With rare exception every tire will show usage that is advised against by tire experts, and cutting of solid tires by driving in car tracks is often noted. The condition of tires is so important and so much economy is obtainable through careful driving and adjustment, that a system of inspection of the wheels of trucks on which are tires sold by the Feltham station has been inaugurated. An inspector visits the garages where the trucks are kept and takes all the time that is necessary to learn the condition of the tires each month, examining them with an electric torch, for this work is generally done at night.

Each Tire Sold Is Inspected.

An individual report is made for each truck and for each tire, and the record shows the name and address of the owner, make of truck, number, the date and the mileage, and covers good condition, overloading, speeding, car tracks, rough roads, tread cuts, non-skid device and wheel alignment and the influence of these factors upon each tire. In addition to condition the inspector makes recommendation that will in his judgment prevent excessive wear or deterioration.

A copy of the report is sent to the owner. The inspector does not establish responsibility, but directs the owner's attention to conditions as they are found, so that they may be changed and tires conservated. This information is extremely valuable in dealing with buyers, because it is practical to determine all

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claims for adjustment equitably and with exact knowledge. Owners are impressed with the fact that the one object is to advise them so they will obtain the greatest value, and sales have been refused in instances where the salesmen were convinced that the owners could not obtain practical results unless the tires recommended were used.

The station has several salesmen whose work is principally with truck owners and records of their visits and the information obtained by them are made daily so that precise information with reference to any customer or prospect is always available. These salesmen have cars and with them are able to cover a large area outside of Providence and the towns and cities surrounding it.

Practical Methods of Teaching Drivers.

With the object of educating the drivers and owners to practical tire economies several gatherings have been held at the station Sundays, invitations being extended to them personally and by letter, at which talks have been made by tire experts and work demonstrated, and moving pictures shown to illustrate conditions that very generally obtain and which can be obviated wholly or in part. These "Conservation Days" are held at intervals, and the drivers and owners are encouraged to relate experiences. They are impressed that drivers as a whole are not to be condemned nor criticised, but are to be taught what will be to their advantage to learn. These formalities are followed by lunch and the resources of the station are shown.

Owners of trucks up to 3½ tons are demonstrated possibilities with pneumatic tires, the station having the exclusive agency for the Presto attachment, with which the largest pneumatic tire can be changed on the road by one man as readily as the smallest. This equipment can be adapted to any wheel if the tire rim has one flange and a removable ring, or two removable rings, and either one or two locking rings. The rim is split diagonally into two sections and on each of these is welded at one end a notched jaw that fits a short welded-on stud on the other end of the section, the jaws and studs inside the rim. The rim is readily separable by prying out the locking ring, removing one side ring and forcing the jaws off the studs. One short lever is the only tool required.

The rim, when assembled, can be carried with an inflated tire, and with an engine pump a damaged shoe may be changed or the tube replaced, without much labor. If a hand pump only is available a change can be made, but inflation will necessitate work in ratio to the size of the tube. Lifting the tire does not require much effort. The rim can be taken off or put on by a small boy. The Presto attachment must be adapted to the rim at the factory and this requires reasonable time, but once adapted the rim will serve for years. Before the Presto attachment was invented roadside changes of large tires was impracticable without special tools and a good deal of labor was entailed. With it one man can do any work quickly and with less delay than would be necessary with a passenger car tire.

RECENT LA FRANCE SHIPMENTS.

The American-La France Fire Engine Co., Elmira, N. Y., shipped 29 pieces of motor fire apparatus in September as follows:

Washington, D. C., type 31-6-85' aerial truck: Denison, Tex., type 75 pumping car; Farmville, N. C., type 75 triple combination; Pawhuska, Okla., type 75 triple combination; Newport News, Va., two type 75 triple combinations; American-La France of Massachusetts, type 75 triple combination; Pittsburgh, Pa., five type 75 triple combinations; Rutland, Vt., type 75 triple combination; Bartlesville, Okla., two type 75 triple combinations; Maywood, Ill., type 40 combination; Keokuk, Ia., type 40 combination; Boston, Mass., type 31-6-85' and 31-6-75' aerial trucks; two type 40 combinations, type 12 pumping engine; Mt. Vernon, N. Y., type 31-6-75' aerial truck; Okura & Co., four type 40 pumping engines; Belize, British Honduras, two type 40 pumping engines; type 40 chemical engine, type 17-4 service truck; Gary, Ind., type 14-4 combination; Hudson Co., N. J., type 12 triple combination: U. S. N., Norfolk navy yard, type 12 triple combination; Des Moines, Ia., type 75 emergency car; Mobile, Ala., type 14-6 combination service truck; Worcester, Mass., two type 17-6 tractors; Athol, Mass., type A-4 combination Brockway.

PACKARD OPENS SOUTHERN DEPOT.

One of the main handicaps to the expansion of the automobile and truck market of the South has been the lack of convenient service facilities. The Packard Motor Car Co., Detroit, Mich., has taken measures to meet the exigency insofar as the Packard products are concerned. On Oct. 1 the Packard company opened a service and parts depot at Atlanta, Ga., doing business under the name of Southeastern Parts Supply Depot.

The states of Tennessee, North and South Carolina, Alabama, Mississippi, Georgia, Florida, eastern Louisiana and a portion of Virginia and Arkansas will be served by this new depot, and Packard distributors in all these states will be able to save their customers 10 days to two weeks time on freight shipments, with a corresponding saving in deliveries by express. The Southeastern Depot will be in charge of R. J. Henderson, who has been a direct representative of the Packard company for some time.

INGRAM AT SPRINGFIELD.

W. W. Ingram of the Ingram Motor Co., Peoria, Ill., has been admitted to the firm of Lord-Wentz Co., Springfield, Ill., distributor of Nash trucks and Oakland and Nash passenger cars in that territory, with headquarters at 213-215 East Adams street.



Wallace C. Hood, General Sales Manager, Standard Motor Truck Co.

CROCKETT EXPORT COMPANY.

The Crockett Motors and Export Co. has been organized in New York to take over the interests of the J. B. Crockett Co., well known for many years as export agent and import representative, doing business largely in the automotive field. During the years prior to the war and during the war time, the J. B. Crockett Co. established agency and distributing connections throughout the entire civilized world, and since the signing of the armistice the concern has received orders for automotive products and equipment amounting to more than $4,000,000. Its headquarters in New York is at 42 Whitehall street. The members of the Crockett Motors and Export Co. are men of wide experience with export and import work in the automotive field.

SINCLAIR COMPANIES COMBINE.

The stockholders of the Sinclair Oil and Refining Corporation, the Sinclair Gulf Corporation and the Sinclair Consolidated Oil Corporation of New York have ratified the action of the directors in agreeing to consolidate under the name of the Sinclair Consolidated Oil Corporation.

All Sinclair properties in this country and abroad are now brought together under the operating control of this one company.

REPUBLICS IN THE LAKE DISTRICT.

The distribution of Republic trucks, manufactured by the Republic Motor Truck Co., Alma, Mich., will be made in the lake counties of Ohio west of Sandusky, by the Eley-Kessler Co., Cleveland. Maj. J. S. M. Eley, formerly in service with the air force in Italy, is vice president and general manager, and C. R. Kessler, formerly with Harshaw, Fuller & Goodwin Co., manufacturing chemist, is secretary and treasurer.

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AUTOMOTIVE ELECTRICAL SCHOOL.

President C. J. Buckwalter of the Ambu Engineering Institute, Chicago, has announced the complete faculty for that school which opened Sept. 29. The faculty will be headed by David Penn Moreton, B. S., E. E., who is well known both as an instructor in electricity and a consulting engineer on electrical problems. The branch of starting and lighting will be in charge of W. N. Littlewood of the college of mechanics and engineers, University of Wisconsin. Henry E. Peers is at the head of the battery department. Mr. Peers is a practical battery man with 22 years electrical experience. The ignition courses will be under the direction of James G. Zimmerman, E. E., who is an inventor of ignition systems, and has been associated with such well known companies as the Thordorsen Electric Manufacturing Co., Splitdorf Electrical Co. and the Jefferson Manufacturing Co.

SEELYE & BROWN STAFF.

The advertising agency of Seelye & Brown, Inc., Detroit, has added to its staff C. C. Smith, formerly connected with the Campbell-Ewald Co., who will supervise the space buying, and in addition will have charge of the research work of the company, and George Wallace, for eight years connected with some of the larger banking and investment organizations of the country, who will take charge of the financial advertising and will assist in the analytical and development work of the company. Both men will act as account managers and will maintain contact with clients.

The personnel of Seelye & Brown, Inc., is now as follows: W. O. Seelye, H. P. Brown, D. C. Flint, C. C. Smith, George Wallace, L. T. Wallace, Ramon Dixon, L. R. Donavin and William Tuttle.

PAGE ENTERS NEW FIELD.

Announcement is made of the formation of a new investment concern, Page & Co., headed by Carl H. Page, former vice president of the Fulton Motor Truck Co., in charge of sales and advertising. Page & Co. will handle securities of legitimate automotive corporations and have offices in New York, Detroit, Chicago and San Francisco.

LANCASTER HAS DETROIT OFFICE.

Frank N. Adgate, western sales manager of the Lancaster Steel Products Co., Lancaster, Pa., has appointed W. J. Clucas manager of its new Detroit sales office. Mr. Clucas has been associated with the Standard Parts Co., Cleveland. A warehouse has also been established in Detroit to further facilitate distribution.

UNION CO. TO ERECT PLANT.

The Union Motor Truck Co., Bay City, Mich., is to build a new plant on a 42-acre site recently secured in the Riverside Park addition.

NORTHWAY'S NEW MODELS.

The Northway Motors Corporation, Natick, Mass., has commenced the production of motor trucks with two models, one known as model B-2 of two-ton capacity, the other, model B-3, 3½ tons. A feature of these machines in their equipment with engines of Northway make, four-cylinder, four by 6.5 inches, four forward gear ratios and reverse, and special lighting and ignition systems.

The camshaft, pump, generator and other parts are driven by a Morse rocker joint high-speed silent chain fitted with compensator adjustment to allow for wear. The governor is a Pierce; the water circulation is by centrifugal pump; the radiator is of the honeycomb type with core attached by header plates to the top and bottom tanks; the carburetor is of special construction; the clutch is a multiple disc type; the transmission is a unit with the power plant; a power take-off is provided; the springs are one-half elliptic; the steering gear is a Ross; the brakes are external expanding; the frame is heavy pressed steel channel with length of 11 feet, eight inches; the tire equipment is optional.

WAR DEPARTMENT TRAILERS FOR SALE.

The War Department has advertised for bids on 75 rubber tired trailers now in storage at Kearney, N. J. The machines are of the four-wheel, drop frame type, made for heavy hauling, with the following specifications: Chassis weight, 5500 pounds; carrying capacity, 10,500 pounds; wheelbase, 156 inches; ground clearance, 12 inches; springs, extra heavy, five-ton truck type; drop forged axles and spindles of nickel steel; couplers at both ends; tires, solid, pressed on, 36 by six inches.

BAY STATE'S ROAD WORK DELAYED.

Road construction in the Bay State, which the state highway commission planned to complete this season, is far behind schedule and most of the major projects now under way will not be finished until next season. This delay was the result of the lack of freight cars for hauling road building material, shortage of labor from various causes and the unusual amount of wet weather, especially during the past month.

UNITED MOTORS CO. IN TOLEDO.

The United Motors Co., manufacturer of United motor trucks, has acquired the old 21st Street Garage in Toledo, O., and will conduct a factory branch there under the management of Frank Noblitt.

LIVINGSTON WITH FEDEDAL.

D. A. Livingston, for many years in the automobile business in St Louis, has joined the sales force of the Federal Motor Truck Co., Detroit.

PACKARD INCREASING TRUCK LINE.

The completion of a substantial addition to the factory of the Packard Motor Car Co. will render possible an increase in output and a more uniform production of the various sizes of the Packard truck. The addition, which will cost $1,750,000 to build and equip, will be in operation in about six months. With these expanded facilities at its command the Packard company will be able to turn out three sizes of trucks, for instance, the three-ton, five-on and two-ton, simultaneously, instead of producing one size at a time, as has been necessary heretofore. This limitation not only affected manufacturing costs, but was even more keenly felt in the matter of deliveries to distributors and users.

The addition is to be a three-story building of standard factory construction, adding 250,000 square feet of floor space to the Packard's present total of 60 acres. A steady production of 1000 trucks a month is contemplated.

MINERVA TO BUILD FACTORY.

The Minerva Engine Co., Cleveland, O., announces the purchase of an eight-acre parcel of land situated on the main line of the Pennsylvania railroad in the suburb of South Newburg, and work will be begun at once on modern factory buildings, the plans calling for 20,000 square feet of floor space in the first unit.

The Minerva company will, for the present, retain its suite of general offices in the Vickers building, 6523 Euclid avenue.

SANFORD TRUCK AGENCIES.

The Sanford Motor Truck Co., Syracuse, N. Y., has recently appointed the following representatives:

Square Deal Machine and Repair Shop, Baltimore, Md.; B. O. Fair, Beaver Falls, Pa.; A. F. Nicholson, Fulton, Md.; Murray Garage, Ithaca, N. Y.; W. O. Nicholson, Greensburg, Pa.; Southwest Motor Co., Fort Worth, Tex.; Brown & Spath Motor Co., Erie, Pa.; H. H. Gilbert, Lynchburg, Pa.; Gilbert Dill, Wilmington, Del.; T. W. Larish, Wyoming, Pa.; Gowanda Sales Co., Gowanda, N. Y.

GREAT WESTERN BRANCH.

The Great Western Commercial Truck Co., Omaha, Neb., has opened a branch in Kansas City in which to assemble motor truck bodies. A two-story building, 100 by 200 feet, at the southeast corner of St. Louis avenue and Santa Fe street, has been leased.

TRUCK MERGER IN CINCINNATI.

The Motor Truck Service Co. has been absorbed by the Gary Truck Sales Co. of Cincinnati, O., and will look after the distribution of Gary trucks in that field. At the head of the new organization are Joe Bauer, Alfred Banholzer and A. Nelson Pope.

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STATE CONTROLS TRUCK LINES.

The state railroad commission in California now has jurisdiction over all motor carriers and passenger stages operating from one municipality to another in that state, and will be compelled to comply with the provisions of a special law intended to eliminate competition that was disastrous to business and dangerous to the public. All companies in operation May 1, 1917, automatically come under the new arrangement and will be allowed to continue business on filing schedules of rates and time tables. These rates will be accepted by the commission, but such acceptance does not protect them from attack either on the part of patrons or by the commission itself, nor does it declare them to be either reasonable or undiscriminatory. This question will be decided by the courts in case they are questioned.

There are at present 1038 motor freight and passenger companies registered with the railroad commission, but such registration was voluntary. Many freight carriers have escaped any sort of jurisdiction by alleging that they were not common carriers. These contract haulers will be permitted to continue in operation, but a bar is placed on all future entries into the field, save where the convenience or necessity of the added service can be be shown, and even then, if concerns already in business offer to add sufficiently to their equipment to care for the alleged inadequacy, no permit will be granted. This provision is said to furnish only a fair protection to investments.

The new law is also designed to put irresponsible parties out of business and make possible such supervision as will provide safe and dependable transportation both of passengers and freight. Every motor truck operating from one city to another will be required to establish its rates to all sections and to file annual and other reports.

HIGHWAY DAY STAGED AT INDIANAPOLIS.

A highways transport day was held recently at Indianapolis, Ind., to stimulate the development of good roads and to demonstrate the utility of the motor vehicle in Indiana. The feature of the day was a motor truck parade in which Indianapolis truck dealers, Indiana transfer men and owners of trucks interested in inter-city hauling or rural express lines, took part. Among the spectators were delegates to the convention of Indiana bankers which was in session and also representatives of the state meeting of county commissioners.

MONEY FOR PENNSYLVANIA'S ROADS.

One of the last acts of the session of the Pennsylvania Legislature, which recently adjourned, placed at the disposal of the state highway department a fund of $61,117,388 for road building and maintenance this year and next.

ROGERS MAGNETO HAS EXCLUSIVE QUALITIES.

Very broad claims for efficiency and exclusive qualities are made for the Rogers magneto, manufactured by the Vita Manufacturing Co., Cleveland, O., chief of which is that it has a magnetic area from 100 to 300 per cent. greater than other makes and types. This increased area develops a hotter spark, which affords more power, a smoother running engine and a large reduction in fuel consumption, whether used for trucks or cars or tractors or aeroplanes or yachts or stationary purposes. Statement is made that the efficiency of magneto ignition has been so developed that the Rogers instrument can be used for all types of engines from two up to and including 12 and 16 cylinders of either the single or two-spark types.

The Rogers magneto is the design of George D. Rogers, who was an engineer for the Standard Oil Co., and later was with the Winton Co., the Peerless Motor Car Co. and then production engineer for the Continental Motors Corporation. The claim is made that until the Rogers instrument was designed no magneto could be utilized for an engine of more than eight cylinders. The Rogers magneto for engines of from two to eight cylinders will produce two sparks a revolution of the rotor shaft; for 12 and 16-cylinder engines will produce four sparks a revolution; for 12-16 cylinder type, two spark type, will produce eight sparks a revolution; for 12 cylinders, two-spark Liberty motor type, will produce 12 sparks a revolution.

Rogers magnetos for two, four, six and eight-cylinder engines have 100 per cent. more magnetic area than conventional types; the 12-16 cylinder engine magnetos have 200 per cent. more magnetic area, and the Liberty motor types have 300 per cent. more magnetic area. The Rogers magneto is a two-pole type and it has no moving wires or revolving armature. It is constructed with three pairs of magnets and a field coil at either side, with the rotor turning between the lower sections of the magnets, with the field coils above it. The breaker box is located at the drive end, surrounding the end of the rotor shaft, with the contacts centered above the shaft, and this is enclosed by a split cover that is retained by a hook and set screw. When the hook is lifted the sides of the cover fall, exposing the interior of the box. The terminals are at the other end of the magneto and these are the conventional type posts with the binding nuts.

Claim is made that the condenser of the magneto is puncture proof and that it cannot be short circuited, even if punctured; that during tests made at Washington before government officials nails were driven through a condenser and pieces were cut from it, without impairing its efficiency. The construction of the condenser is claimed to obviate pitting of the breaker points because there is no arcing, as the current delivered is balanced by the condenser. The insulation is claimed to be absolutely waterproof, so that coils submerged in water for a week have been found perfectly dry. The design of the magneto is such that it has compactness, light weight and full accessibility, three qualities that are desirable in such instruments.

TRUCK OWNERS IN SESSION.

The 10th annual conference of truck owners, held in Chicago, Sept. 25 and 26, was largely attended and helpful. Questions of vital interest in regard to the operation of motor trucks, covering almost every phase of their activity, were discussed, the formal topics and leaders being as follows:

Debate, "Pneumatic vs. Solid Tires;" "How the National Standard Truck Cost System Is Being Used to Increase Profits." F. J. Bridges, general manager, Hydrox Co.; "The Success of Organized Inter-City Trucking," J. D. Porter, general manager, Interurban Motor Dispatch; "Analyzing Motor Trucks vs. Freight as to Range, Cost and Service," Harold P. Gould, chairman, Truck Owners' Conference; "Selecting and Training Drivers," Harold B. Weaver, consultant, Chicago Motor Bus Co.; "Prize Plans and Incentives for Drivers That Make Them Partners," E. W. Turley, manager automobile service department, Wilson & Co.; "Keeping Horse Team Costs," A. F. Benson, secretary-treasurer, C. O. Olson Cartage Co.; "Routing, Scheduling and Dispatching Trucks—Greater Tonnage with Fewer Units," Major John N. Gage, Motor Transport Corps, U. S. A.; "Loading and Unloading Methods That Save Time," W. J. Newman, president, W. J. Newman Co.; "Inspection and Lowering Maintenance Costs," S. W. Luther, transportation superintendent, Great Atlantic & Pacific Tea Co.

KEEFER RETURNS TO FORMER POSITION.

Sergeant Edward W. Keefer has been discharged from service with the government abroad and has resumed his former position as eastern traveling representative of the Bearings Company of America, Lancaster, Pa. Sergeant Keefer enlisted in May, 1917, and saw service in several major engagements in France with the 28th division.

IOWA DIVIDING MOTOR FEES.

The State of Iowa has adopted the plan of distributing the fees obtained from the licensing of motor cars in that state among the various townships to be applied to secondary road work. The total sum just distributed amounted to $1,208,880, and this gives practically $750 to each of the 1685 townships.

SCHACHT'S CHICAGO MANAGER.

E. T. Ze Hagen has been transferred from the Cincinnati factory of the G. A. Schacht Motor Truck Co. to be manager of the Chicago branch at 2021 Michigan avenue.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 11. PAWTUCKET, R. I. NOVEMBER, 1919.

TRUCK SALES MANAGERS PROPOSE TRADE REFORMS

Fine Spirit for Cooperative Industrial Promotion Developed at Detroit Convention—Warnings Against the Destruction of "Trading" and Lack of Production and Selling Costs

Detroit, Nov. 9.—The first year of existence of the National Association of Motor Truck Sales Managers was rounded out by the convention that was concluded at the Hotel Statler yesterday, which was attended by a very large part of the membership.

The convention was enthusiastic and the members were decidedly optimistic. They realize that the industry is increasing in importance constantly and that the turning point has been reached in sales resistance so far as mechanical practicality of power vehicles is concerned.

But they also understand that there are obstacles just as towering as the education of the public to highway haulage which must be met.

These, however, have an entirely different aspect when one realizes the splendid spirit of cooperation that has been developed in general promotion of power truck use, which has been developed through the association.

The organization has adapted to selling a policy that has been proven



The First Annual Dinner of the National Association of Motor Truck Sales Managers in the Ball Room of the Hotel Statler at Detroit, the First Evening of the Convention.

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especially successful by some of the largest trade associations of the nation and has begun a campaign of publicity and education that will unquestionably be productive.

The growth of the association has been phenomenal. It was conceived at a meeting attended by several sales managers at Cleveland and a proposition was submitted to the different concerns of the industry that they be represented in it.

Membership of Association Is Now 61.

The proposal appealed to those who received it, and the best evidence of its practicality is evidenced by the membership, which now is 61 and includes nearly all of the larger and well established companies building trucks.

The original intention was to limit the membership to sales managers, but now the organization will admit those executives of concerns who are concerned in sales.

The association does not in any way conflict with good sales policies—that is, there is no purpose of dictating sales methods, but there is a desire to standardize such details as dealer contracts, service and to generally develop promotion as well as eradicate what has been proven by experience to cause resistance to sales.

The organization has grown because the officers have convinced the members that subordinating competition to promotion is practically possible, and there is



H. F. Harris, Bethlehem Motor Corporation, Re-Elected a Director.

no question that the results will be realized by all in much larger measure than was believed.

Unity Evidenced by Demonstrating Tour.

This was demonstrated by the success of the demonstration tour made through the six northwestern states, starting from Chicago, Aug. 4 and concluding at Milwaukee on Oct. 4, in which 16 companies were represented. The tour was, from the viewpoint of the sales managers who participated in it for varying periods, a real highway transportation awakening. Thousands who must have animal or power haulage witnessed the use of the trucks for all kinds of work. The trucks,



Hal T. Boulden, Selden Truck Corporation, Re-Elected a Director.

ranging in load capacity from 3000 to 5000 pounds, all equipped with pneumatic tires, were driven more than 3000 miles on all kinds of roads, and they maintained an itinerary to a time schedule that was not believed possible until proven.

This tour is emphasized as an example of the cooperation of the industry from the fact that no endeavor was made to sell trucks. No literature of the companies was distributed and no prices were quoted, although hundreds of inquiries were made of the crews and the representatives of the manufacturers. Every inquirer was referred to the dealers or the concerns.

Prospects of Thousands of Sales.

The result of the tour was the sale of trucks by dealers in practically every locality visited by the caravan, with the prospect of the sale of thousands from the promotion in which the industry as a whole shares.

One may ask what bearing the results of the tour had on the convention. The answer is that the same policy that directed the northwestern demonstration has been turned to other channels that will similarly benefit the industry.

The convention was extremely business like. The first day the morning and afternoon was given over to the presentation of a number of papers which presented subjects of material interest. The banquet took place the evening of the same day and was an event to be remembered. The morning of the second day was devoted to a round table discussion of topics of general interest, new business was outlined and plans were proposed for the next meeting. Then came the election of officers.

The afternoon was taken up with the "movies," these being of the national development tour, with talks in explanation of the scenes, and a series of pictures of the transcontinental journey of the Motor Transport Corps, United States Army, which was the longest ever undertaken by a military command.

Discussed the "Trade-in Evil."

It was from many points of view a fruitful assemblage, for the speakers talked facts that were known and understood and made suggestions that will undoubtedly lead to betterment of the sales organizations especially, and the industry as a whole.

One address that was unusual was by J. W. Allen, manager of the New York branch of the Service Motor Truck Co. Mr. Allen dealt with trading or exchanging new trucks for old machines and cash, pointing out that the valuations placed on old machines were so large that the allowances absorbed much if not all of the profits of the dealers, and they, because of their eagerness to make sales frequently, destroyed their own businesses.

Mr. Allen's subject was not new, but he attacked it from a different angle with the object of driving home the truth, and he did not hesitate to call a spade a spade. He maintained that placing excess values on old trucks was dishonest. He held that any one who in any way contributed to the world's dishonesty was dishonest himself.

One of the primary reasons for making excessive allowances for used machines was that the dealers themselves did not know their own cost of doing business. They were in a sense ignorant and did not take practical measures to protect themselves. He instanced piano and



Harry A. Conlon, Acason Motor Truck Co., Elected a Director.

printing machinery as being received in exchange by manufacturers, but being destroyed because the old units were regarded as worthless for resale, and destructive of the business of their agents.

Trading Worthless Trucks Is Suicide.

He dwelt upon the fact that many truck dealers have lost money, some have failed and others have sold one make for comparatively brief periods, simply from the fact they accepted old machines at excessive values and so much reduced profits that they could not continue.

While this, of course, applied to the dealer, there was the owner to be con-

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sidered, for the service afforded by uncertain dealers usually reacted and caused dissatisfaction, and it all came back to the manufacturer especially and the industry as a whole.

The industry itself was at fault because it had done nothing that would bring about a change. The paper proposed that the value of the used trucks be fixed by the resale prices established for usable parts, that the machines be disassembled, and the parts returned eventually to the manufacturers by what is practically a clearing house plan of operating.

Proposed to Value Parts Only.

In other words, he proposed what is essentially a salvaging plan, using whatever parts were serviceable and placing upon them a catalogue or market value to the manufacturer for resale, and returning them to the manufacturer for distribution wherever they could be used. He supplemented this by suggesting a more definite form of contract between the manufacturer and distributor so that there would be established valuation of salvaged parts, the manufacturer agreeing to find a market for them; that the distributor bind himself to furnish a monthly financial statement of his business to the manufacturer. He proposed that this contract be enforced through the credit departments of the manufacturers. This was offered as a suggestion for the development of a plan or policy which would prevent dealers committing financial suicide by taking used trucks in exchange at excessive valuations and protect all interests.

Effect of Pneumatic Tires on Truck Sales.

Another extremely interesting paper was read by C. A. Wales, sales manager for the Locomobile Co. of America, which dealt with the effect of pneumatic tires on truck sales. In this Mr. Wales pointed out that the use of pneumatic tires for truck equipment was comparatively recent and for this reason statements of comparative cost of solid and pneumatic tires could not be given, but there was reason to assume that pneumatic tires had a considerable element of economy that could not be determined by tire cost alone, this being in fuel and lubricant consumption, in mechanical maintenance and in saving time through increased speed.

He believed that the utility of trucks would be increased with pneumatic tire equipment and that this would mean decreased cost of transportation generally, this in turn resulting in greater use of trucks. That is, basing comparison on the use of passenger cars, he assumed that the use of trucks would generally increase with the reduction of the cost of service.

He thought that there had been sufficient demonstration of the practicality of the use of truck units for transportation; that it was possible to haul a considerable part of the tonnage transported with trucks. But a good deal depended upon the tire manufacturers and the economy of haulage would probably be in ratio to the improvement of tires.

Truck Salesmen Lack Qualifications.

While this was the subject with which Mr. Wales had to do he turned to the subject of truck selling and pointed out that he had made an investigation of the abilities of truck salesmen. In one instance he had resorted to advertising to obtain from men their own estimates of their qualifications as a basis for comparison with his own opinion of what was essential. Another source of information was obtained from the purchasing agents of large concerns—men who meet the salesmen of numerous industries and from personal contact with men were able to judge their abilities and their knowledge of what they sold.

According to Mr. Wales' statements truck salesmen did not measure up to the standard of salesmen of other industries. In fact they were as a rule from 25 to 50 per cent. efficient in the opinion of the purchasing agents. While they might know the mechanical construction of a truck, or be well informed of the specifications, they had comparatively little knowledge of highway transportation. They could not sell trucks on the same basis that the salesmen of the other industries sold their products, because they had not the experience or the facts to give, and could not convince their prospects as did the other men met by the purchasing agents.



A. E. Schaefer, Gramm-Bernstein Motor Truck Co., Elected a Director.

This was an extremely unfortunate condition because it limited the sale of trucks to an unknown degree, which directly affected the manufacturer, but it also lessened their own productiveness. What was necessary was the training of salesmen to have a real knowledge of transportation—for that was what was sold by the truck industry—so that they would compare favorably with the representatives of other industries.

The reason this phase was introduced was that the use and possibilities of trucks equipped with pneumatic tires was a comparatively new development, and there was need of the salesmen having specific information that would serve them. The industry ought to do all that was possible to obtain facts that could be used by its salesmen with a view to perfecting them.

To Discourage Prohibitive Legislation.

A third subject of especial interest was a consideration of what had best be done to discourage prohibitive legislation against power trucks, which was dealt with in a paper by General Manager Alfred Reeves of the National Automobile Chamber of Commerce, and who has been continuously identified with the industry probably a greater length of time than any man of the assemblage he addressed.

Logically he pointed out the value of a uniform law that would apply equitably throughout the country, and which would have the approval of practically all interests, and he reviewed the conditions that have or do now exist that have led to this need for legislation. He believed the greatest progress could be made by cooperation and not by antagonizing those who had different views, for after all practically everything depended upon the public—in the last analysis the public had what it wanted. For this reason a campaign that was safe and sane was to be recommended. Fair consideration should be given every proposal and the question of taxation must be dealt with reasonably. The matter of limitations of vehicle dimensions, weights and tire sizes should be carefully determined, for these must be included in legislation that would satisfy the people.

While the industry was seeking to protect itself it ought to protect the public as well and to do this should study conditions with the purpose of presenting facts to legislators, for experience had established that while they were disposed to be fair they were not always well informed, and with facts and cooperation by the industry ought to be depended upon to enact reasonable and just legislation.

Selling Trucks to Farmers.

A considerable part of the sessions of the association were limited to members only, but two of the papers, those by F. W. Fenn, secretary of the Motor Truck Committee of the National Automobile Chamber of Commerce, on "Selling the Farmers and Operators of Rural Motor Express Lines," and by Vice President C. R. Talbot of the National Bank of Commerce, Detroit, on "The Attitude of Banks Toward Financing Motor Trucks for Dealer and Retail Purchaser," were open and were listened to with much interest.

Mr. Fenn's paper was devoted to statements generally showing the economies from the transportation of live stock from farms to stock yards, the animals being delivered at times considerable distances with substantial saving in transportation charges as compared with railroad freights, as well as little if any of the shrinkage which would be realized were the creatures driven or shipped by car, this meaning a direct gain.

What a Banker Can Do for Dealers.

Mr. Talbot regarded the sale of trucks from the viewpoint of the banker who is required to finance buyers. He instanced that the passenger car had been a mighty factor in increasing the valuation of

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property because it had made desirable realty considerable distances from commercial centers as measured by other methods of transportation, and people who would under other circumstances be compelled to reside closer to their places of business had purchased and developed property that a few years ago had comparatively little value.

What was true with the passenger car was equally true of the truck in that it made it possible for those engaged in agriculture within reasonable distances of cities to obtain better prices through direct deliveries and supplying the demands of the markets instead of dealing through others and accepting what was offered in prices. This would increase the value of farm property.

Educate the Banker to Trucks.

Where trucks were needed and could be used advantageously they were a decided economic factor, but where they were not an economy they were a burden. He believed that the average banker did not have knowledge of the truck possibilities and was inclined to regard truck buying as extravagance, largely from that fact. He stated that were he a dealer he would take the banker into his business affairs so far as this was practical and when he had occasion to obtain financial assistance he would invite the banker to visit the factory of the manufacturer he represented, and would show him the stability of it as an industrial enterprise, and interest him in it because of its manifest business possibilities.

He believed that the banker would be willing to engage in legitimate financial undertakings provided that he had better information upon which to base judgment, and were he to depend upon casual observation instead of direct knowledge he would have entirely different conclusions. There would undoubtedly be cooperation were the banker to learn something of the automobile industry, for he would be unwilling to let the proceeds of what could be made profitable business go to corporations formed especially for financing time sales. But everything depended upon the dealer and his willingness to be guided in his operations by a trained financial mind rather than upon his own opinion. The banker is willing to authorize investment that is safe, but he is justified in refusing credit unless it is based upon sound business principles.

The Convention Program.

The programme for the convention was as follows:

Morning session, first day: Meeting called to order; roll call of members, with President J. E. Tracy presiding.

Get-acquainted session, followed by an address of welcome by Edward Hines, president of the Detroit Automobile Club.

Response by President J. E. Tracy.

Enrollment of new members, with the report of the membership committee.

Address, "Eliminating the Trade-in Evil," J. W. Allen, manager New York branch for the Service Motor Truck Co., New York City.

Address, "Practical Method of Determining Values of Used Motor Trucks," H. H. Shuart, secretary, Detroit Automobile Dealers' Association.

Address, "Prohibitive Licensing or Taxing of Motor Trucks and Motor Truck Legislation," Alfred Reeves, general manager, National Automobile Chamber of Commerce.

Address, "Effect of Pneumatic Tires on Truck Sales," C. A. Wales, sales manager, Locomobile Co. of America, Bridgeport, Conn.

Afternoon session, first day:

Address, "Selling the Farmers and Operators of Rural Motor Express Lines," F. W. Fenn, secretary, Motor Truck Committee, National Automobile Chamber of Commerce.

Address, "Attitude of Banks Toward Financing Motor Trucks for Dealer and Retail Purchaser," C. B. Talbot, vice president, National Bank of Commerce, Detroit.

Address, "Good Trade Practises," A. J. Whipple, general sales manager, Diamond T Motor Truck Co., Chicago.

Address, "Vocational Selling on Advertising Mediums," L. B. Dudley, advertising manager, Federal Motor Truck Co., Detroit.

Address, "Should Trucks Be Manufactured and Sold Completely Equipped," A. E. Schafer, general sales manager, Gramm-Bernsetin Motor Truck Co., Lima, O.

Morning session, second day, President Tracy presiding.

Round table discussion on topics of general interest.

New business proposed and plans suggested for the next meeting.

New Board of Officers.

Election of directors and officers. There was little change in the roster. A. R. Fernald, representing the Willys-Overland Co., retired from the board, his place being taken by A. J. Whipple, sales manager for the Diamond T Motor Truck Co. The board was increased to nine members by the election of three, the membership being:

Hal T. Boulden, Selden Truck Corporation, Rochester, N. Y.; A. C. Burch, Clyde Cars Co., Clyde, O.; A. J. Whipple, Diamond T Motor Truck Co., Chicago; E. T. Herbig, sales manager, Service Motor Truck Co., Wabash, Ind.; H. F. Harris, Bethlehem Motors Corporation, Allentown, Pa.; F. L. Pierce, Federal Motor Truck Co., Detroit; J. E. Tracy, Sterling Motor Truck Co., Milwaukee, Wis.; F. G. Elder, Day-Elder Motors Corporation, Newark, N. J.; Harry A. Conlon, Acason Motor Truck Co., Detroit; A. E. Schafer, Gramm-Bernstein Motor Truck Co., Lima, O.

The directors then elected the following officers:

President, J. E. Tracy, Sterling Motor Truck Co., Milwaukee, Wis.

First Vice President, Hal T. Boulden, Selden Truck Corporation, Rochester, N. Y.

Second Vice President, W. D. Rightmire, Winther Motor Truck Co., Winthrop Harbor, Ill.

Secretary-Treasurer, E. T. Herbig, Service Motor Truck Co., Wabash, Ind.

Executive Secretary, J. M. Carney, Milwaukee, Mis.

General Manager and Headquarters.

The board of directors considered the proposition of establishing association headquarters in charge of a general manager, and sounded the members on the matter of location, the choice finally resting between Chicago and Detroit. The object is to have a main office where it will be conveniently accessible for personal visit, and easily available for information of any character. In the original organization the secretary and treasurer were each engaged a considerable distance apart, and to better serve the interests of the association members the two offices were combined.

The directors decided that a mail vote by all members would best decide the question of location, and the board will, upon decision, determine who shall serve as general manager, having several names under consideration.

National Development Tour "Movies."

The closing afternoon session was devoted principally to a display of 3000 feet of moving picture film taken during the National Motor Truck Development Tour, and moving pictures showing the march of the Motor Transport Corps, U. S. A., across the continent from Washington to San Francisco, and moving pictures of the development tour made by a second concern.

Preliminary to the pictures was an address by A. R. Kroh, official lecturer during the tour, who is associated with the Goodyear Tire & Rubber Co. He emphasized the possibilities for the sale of trucks for agricultural operations and rural transportation, as developed by the demonstration, and dilated upon the use made of pneumatic tires and what was done with these machines in both road and field work. He maintained there was a vast potential market practically undeveloped, and which offered practically unlimited possibilities for sales. He referred to the fact that the industry had engaged in this exploitation without thought of competition and had found an interest in machines that was not realized save by those who were personally in contact with the farmers during the tour.

Caravan Kept Up to Schedule.

He maintained that work had been done with the trucks, largely from the tire equipment, that was believed impossible, and that in roads that were frequently impassable for passenger cars and trucks with solid tires the caravan had kept up to schedule time and often was in advance of it. This schedule was necessary because of the meetings that had been arranged along the entire route. The fact that the tour did not fail in its schedule was a great surprise to the army officers representing the War Department and the Motor Transport Corps, who traveled over a part of the route, and the information obtained by these trained observers was of large value to the government.

He stated that wherever the caravan passed there was invitation for the officials to return and display the moving pictures, and because of their educational value plans had been made to show the pictures at something like 2800 meetings of farmers' organizations during the winter. The intention was to show these in all parts of the country, and the interest

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that these would develop would be very far reaching.

The pictures were explained by Mr. Kroh, who related facts that were especially significant to the truck sales managers. He took occasion to criticise truck body design, which he explained was due to learning that not one of those used in the tour met the requirements of the farmers, largely from the fact that some of the loads were very bulky and light, and pictures were shown where all that could be piled on a 5000-pound truck body weighed hardly more than 1500 pounds. The trucks were satisfactory for the uses made of them and were regarded as practical, but there was real need of different type bodies if the trucks were to be satisfactory to farmers.

March of Motor Transport Corps.

Then came a series of pictures illustrating the march of the Motor Transport Corps across the continent, this being principally through the West, where the roads were often trails and at times deep with mud, the trucks plowing along in conditions that would be practically impossible for freight transportation.

The so-called roads ranged from sand of varying depths, which was reasonably passable during rains, to dust that when wet became more or less fluid, and when dry filled the air and made travel anything but a joy ride. But the greatest obstacle to progress was the flimsy bridges, which frequently crashed from the weight of the heavy trucks, and which were often strengthened so that the train could pass.

The march was undertaken as a military study and to recruit the Motor Transport Corps, and was extremely valuable because of the data obtained, but obviously freightage such a distance would not be practical and certainly would not be economical.

Dinner with Many Features.

The evening of the first day was the occasion of a banquet in the ball room of the Statler that was attended by about 250 persons, the majority of whom were identified with the industry or trade. The event was one of unusual pleasure and was keenly enjoyed. Following an admirable menu the company welcomed J. U. Higinbotham as toastmaster, who informed it that had the Children of Israel had trucks during their wandering in the Wilderness they would have completed their journey in 29 hours instead of 40 years.

President J. E. Tracy spoke briefly, his subject being "A Word to the Wise," and then came the principal address of the evening by Norval A. Hawkins, formerly sales manager for the Ford Motor Co., whose subject was "Constructive Versus Detructive Selling." There was no doubt of the facts that Mr. Hawkins presented nor the truth of the illustrations. He instanced that only three of the truck concerns actively producing machines nine years ago were now operating, these being the only ones to survive. This he stated was due to failure to organize and systematize the production and distribution so as to insure good trucks, adequate sales and reasonable profits. He stated that today there are more concerns building trucks than are manufacturing cars.

One of the principal causes of destruction was price cutting, or what was equally bad business, accepting old trucks in exchange for new at values in excess of their worth. This was because the dealer is anxious to make sales and believes he can dispose of what is practically worthless, and may cause still further expenditure before it is passed to others. There was no reason for a dealer undermining his own business, but that was practically what was done when trucks were sold under the market value or were exchanged for cash and what was worth little or nothing.

Cost Figures Not Accurate.

One mistake made by manufacturers was the method of figuring costs, for rarely were these such as would give accurately the expense of production or of selling, and without these no price could be established that would afford a sufficient profit. He believed that knowing the cost was the first essential of business and without this information there was certainty of complications financially.

He maintained that the association could do much for the industry by developing a plan for standardizing costs, which would be of material value to the members, and with such a measure the manufacturers would be able to avoid the pitfalls that had been the undoing of numerous concerns. He proposed that the industry could protect itself by practical methods, some of which he suggested.

In addition to this H. S. Firestone of Akron, O., made an address on "Ship-by-Truck," Capt. "Eddie" Rickenbacher told some of his service experiences as an aviator in the European war, and James Schemerhorn of Detroit spoke in a humorous vein.

One of the events of the evening was the appearance in the ball room of a "lumberjack," who spoke a French-Canadian patios and sought to make friends with some of the diners. Later on he announced that he was Rene Vadiboucoeur from St. Jean Baptiste, P. Q., that he had been advised by wire that he would find Sales Manager J. E. Bowman of the Garford Motor Truck Co. at the hotel, and that he was going to find him. He explained that he had last April made a contract with the sales manager for the agency for Garford trucks for St. Jean Baptiste, had paid $600 deposit on six trucks, and he had not received the machines and his money was not returned.

He had copies of letters and he was armed with a bank book which he claimed showed deposits of $50,000 in a Canadian bank, and he wanted his money, the agency, apologies, satisfaction and possibly a scalp or two. The "Canadian" terror was loud in his denunciations and threatening in his attitude, and some of the diners became irate and wanted to make a football of him. And when the atmosphere had been properly heated and the company was well agitated the "lumberjack" was hustled out.

Shortly after a gentleman in immaculate attire sauntered into the room and after he had been introduced to some of the company and specifically to Mr. Bowman, he resumed his place at the table. He was Bernard J. Goodman of Ishpeming, a widely known Michigan lumberman, who had consented to amuse the sales managers and their guests in what was probably as clever a "dinner stunt" as had ever been conceived. It was described in part in the "The Naomtsm," a special paper that was circulated as a souvenir shortly after.

Some of Those Present.

Among the members attending the convention were the following:

Acason Motor Truck Co., Detroit, Vice President Harry A. Conlon and Assistant Sales Manager Donald F. Whittaker.

Acme Motor Truck Co., Cadillac, Mich., President and General Manager W. A. Kysor and Sales Manager C. J. Helm.

American Motor Truck Co., Newark, O., President J. D. Potter and Sales Manager H. J. Vogler.

O. Armleder Co., Cincinnati, O., Sales Manager C. H. Woodruff.

Atterbury Motor Car Co., Buffalo, N. Y., Sales Manager W. A. Clare.

Bethlehem Motor Corporation, Allentown, Pa., Sales Manager Ray S. Davey.

Brockway Motor Truck Co., Cortland, N. Y., Secretary F. R. Thompson.

Clyde Cars Co., Clyde, O., Vice President A. C. Burch.

Commerce Motor Car Co., Detroit, President W. E. Parker.

Corbett Motor Truck Co., Henderson, N. C., P. J. Corbitt.

Day-Elder Motors Corporation, Newark, N. J., Treasurer and Sales Manager F. G. Elder.

Denby Motor Truck Co., Detroit, Vice President J. C. Ayers.

Diamond T Motor Truck Co., Chicago, Sales Manager A. J. Whipple.

Duplex Truck Co., Lansing, Mich., Sales Manager A. Langenbacher.

Federal Motor Truck Co., Detroit, Sales Manager F. L. Pierce.

Fulton Motor Truck Co., Farmingdale, N. Y., L. W. Sidwell and H. P. Wilson.

Fulton Motor Truck Co. of New York, New York, N. Y., C. M. Craban.

Garford Motor Truck Co., Lima, O., Sales Manager J. F. Bowman.

General Motors Truck Co., Pontiac, Mich., Lawren F. Robinson.

Gramm-Bernstein Motor Truck Co., Lima, O., Sales Manager A. E. Schaefer.

Hamilton Motors Co., Grand Haven, Mich., W. G. Jarman.

Indiana Motor Corporation, Marion, Ind., E. A. Rightlinger.

International Harvester Co., Chicago, Ill., H. A. Hawley.

Kalamazoo Motors Corporation, Kalamazoo, Mich., Sales Manager H. G. Stiles.

Lewis-Hall Iron Works, Detroit, H. H. Hall and W. S. Ackerman.

Locomobile Co. of America, Bridgeport, Conn., Truck Sales Manager Claude A. Wales.

Maccar Truck Co., Scranton, Pa., Sales Manager A. J. Sanderson.

Maxwell Motor Co., Detroit, Mr. Plath.

Oshkosh Motor Truck Manufacturing Co., Oshkosh, Wis., Sales Manager Homer Hilton.

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Packard Motor Car Co., Detroit, R. E. Chamberlain.

Paige-Detroit Motor Car Co., Detroit, C. S. Pike.

Republic Motor Truck Co., Alma, Mich., Mr. Carr and S. S. Swiss.

Reo Motor Car Co., Lansing, Mich., Byron C. Fay.

Selden Truck Corporation, Rochester, N. Y., Vice President-Sales Director Hal T. Boulden.

Service Motor Truck Co., Wabash, Ind., Sales Manager E. T. Herbig.

Signal Motor Truck Co., Detroit, Sales Manager M. B. Hoagland.

Sterling Motor Truck Co., Milwaukee, Wis., General Sales Manager J. E. Tracy.

Union Motor Truck Co., Bay City, Mich., Hugh M. Donegan.

United States Motor Truck Co., Cincinnati, O., General Manager Forrest J. Alvin.

Velie Motors Corporation, Moline, Ill., Sales Manager E. R. Gardner.

Willys-Overland, Inc., Toledo, O., E. A. Hart and S. N. Cooper.

J. C. Wilson Co., Detroit, Vice President and Sales Manager E. D. Hand.

Winther Motor Truck Co., Winthrop Harbor, Ill., Mr. Smith.

CASHIN NOW ADVERTISING MANAGER FOR ACASON TRUCK CO.

J. G. Cashin, who was for a considerable time associated with the Standard Motor Truck Co., Detroit, as advertising manager, has joined the Acason Motor Truck Co. of that city in a similar capacity. He succeeds Donald F. Whittaker, who had served in the dual capacity of advertising manager and assistant sales manager, who has been made assistant to Vice President and Director of Sales Harry A. Conlon, and will now devote himself exclusively to sales and sales promotion.



J. G. Cashin, Advertising Manager, Acason Motor Truck Co.

BENDER NOW WITH THE C. A. S. ENGINEERING CO.

John L. Bender, who was sales manager for the Anderson Forge & Machine Co., Detroit, has resigned to associate himself with the C. A. S. Engineering Co. of the same city. The C. A. S. company is now representative for the Pollock Steel Co., which operates plants at Chicago, Cincinnati and Marion, O.

The Pollock company produces light and heavy forgings for the automotive industry, heavy forgings for locomotives, engines, machine and marine service, industrial forgings of all kinds, hammered, pressed or drawn, and rolled products such as angles, shapes, tees, merchant bars, concrete bars, etc. It has been established 52 years and its entry into the automotive industry with a new forge plant at Chicago will make it an important factor in power vehicle production.

Ruggles and Willis Control Republic Truck Company

Alma, Mich., Nov. 15.—Statement was made here today by F. W. Ruggles, president of the Republic Motor Truck Co., that he had, with John N. Willys and W. J. Baxter of New York City, purchased control of the Republic Motor Truck Co., Inc., and the Torbensen Axle Co. of Cleveland, a subsidiary of the Republic company.

The interests in the two companies, which were held in Cleveland, Alma and other cities, have been bought outright, and the men whose holdings were purchased, including Charles G. Rhodes, formerly secretary of the Republic Co.; C. F. Hepbrun, formerly vice president and general manager; J. O. Eaton, general manager of the Torbensen Axle Co., now have no connection with either of the two organizations.

Mr. Ruggles made clear that statements connecting the Willys-Overland Co., Toledo, O., with the purchase of the company, have no foundation, the transaction being a purely personal investment made by himself, John N. Willys and W. J. Baxter. He also emphasized that the original administration policies of the Republic Motor Truck Co. would be continued in large measure and that there was every reason to anticipate continued growth and prosperity for the concern.

BANQUET OF THE N. A. C. C.

One of the prominent social activities during the week of the New York motor vehicle shows will be the annual banquet of National Automobile Chamber of Commerce, which will be held in the grand ball room of the Commodore Hotel, Tuesday evening, Jan. 6.

Besides the one principal speaker which it is customary to have at N. A. C. C. affairs, there will be a presentation of awards to individuals who have rendered important service to the industry during the past 12 months and an original play on timely topics in the industry will be given, which was written and will be staged by Fred E. Dayton, vice president of the Ajax Rubber Co., and Henry Caldwell, automobile editor of the New York Herald.

With the additional accommodations that the ball room provides, it will be possible to care for a number of men in the industry aside from members of the N. A. C. C., and balcony seats will be provided for ladies.

SOPHER IS ACASON DISTRICT SALES MANAGER.

John B. Sopher, who was general manager for the Acason Motor Sales Co., Philadelphia, has been appointed district sales manager for the Acason Motor Truck Co., Detroit, with headquarters at Philadelphia. He will have direct supervision of all Acason sales organization from New York City to New Orleans, taking in every southern state east of the Mississippi river.



John B. Sopher, Southern District Sales Manager, Acason Motor Truck Co.

ADVERTISING AGENT ABROAD WITH BETHLEHEM TRUCK HEAD.

Frank Sheridan of Sheridan, Shawhun & Sheridan, advertising agency, New York, handling among others the accounts of the Bethlehem Motors Corporation and the American Bosch Magneto Co., has sailed for Europe, where he will meet, in London, Arthur T. Murray, president of those two concerns. Mr. Sheridan will in all probability return to America about Christmas with Mr. Murray, whose trip to Europe was taken in connection with an order for more than 4200 Bethlehem trucks to be followed by other orders to be delivered in weekly shipments covering a period of years.

CASAGRANDE WITH WINTHER.

L. B. Casagrande, formerly sales manager for the Available Truck Co., Chicago, is now sales manager in charge of the southern district for the Winther Motor Truck Co., Kenosha, Wis.

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CHANGES IN TRUCK SALES FORCES

E. A. SHELLY IS ASSISTANT SELDEN SALES MANAGER.

E. A. Shelly, who was engaged in sales promotion for a well known eastern truck company, is now connected with the



E. A. Shelly, Assistant Sales Manager, Selden Truck Corporation.

home office of the Selden Truck Corporation at Rochester, N. Y., as assistant sales manager, succeeding C. E. Williams, resigned. Vice President Boulden, in charge of sales and advertising, has organized an advertising department that will be operated at the home office, and the sales department has been completely reorganized to meet the demands of the increased production under the new plan of operating.

PISTON RING CO. EXPANDING ITS MUSKEGON PLANT.

The Piston Ring Co., Muskegon, Mich., which claims to be the largest manufacturer of piston rings in the world, is erecting an addition to its plant, now being constructed by the National Construction Co. of Detroit and Muskegon, which will, when equipped, bring the production up to more than 125,000 rings a day. The demand for its products has necessitated this expansion, the second made in a few years. The company expects that the new plant will be operating before the end of the year.

The company produces piston rings for automotive engine, pump and compressor manufacturers, furnishing angle jointed, lap joined or specially designed rings to meet any requirement, and the production is now considerably in excess of 1,000,000 a month.

The rings are made from a tough, close grained gray iron that is subjected to laboratory analysis before and after casting, and the plant is equipped with much special machinery designed and patented by C. E. Johnson, president of the company. All rings are individually cast by a patented process.

BARBER IS FIELD SECRETARY FOR THE M. A. M. A.

Alexander W. Barber, formerly connected with the credit department of the Irving National Bank, New York City, has been appointed field secretary for the Motor & Accessory Manufacturers' Association, and is now making his first visit West in that capacity. He is to travel about the country and keep in direct personal touch with the members of the organization. Mr. Barber handled many of the important accounts of the automobile industry while engaged in bank work and was prior to that connection associated with the inspection department of the New York Life Insurance Co.

He is expected to cooperate with the credit managers for the different companies of the company, so that the members will receive the benefit of constructive suggestions and endeavors. The association now includes more than 360 companies, a gain of 25 since July, with a number of applications for membership now pending. This membership represents the major part of those producing engines, parts, tires, accessories, equipment and supplies in the automotive industry. The intention of the association is to materially increase the value of membership privileges.

GRIGSBY EXPLOITING EUROPE.

B. S. Grigsby, vice president of the Anderson Electric Specialty Co., Chicago, who was formerly managing director for Benjamin Electric, Ltd., London, for nearly 10 years, manufacturing electrical and automobile specialties, is now in Europe engaged in exploiting the productions of the Anderson company. Much of his time will be spent in London and Paris arranging for the distribution by foreign agents.



L. M. Field, Pacific Coast Representative, Selden Truck Corporation.

PICKENS IS ADVERTISING MANAGER FOR SELDEN TRUCK.

The Selden Truck Corporation, Rochester, N. Y., has established an advertising department within its organization which



J. E. Pickens, Advertising Manager, Selden Truck Corporation.

has been placed in charge of J. E. Pickens, who was for nearly five years assistant advertising manager for the Federal Motor Truck Co., Detroit. Previously the advertising for the Selden company was handled by the agency having the Selden account, but the nation wide distribution of Selden trucks necessitated in a change in the policy. In addition to directing the advertising, Mr. Pickens will also edit "Transportation," a publication that will be produced by the Selden company for the purpose of promoting power highway haulage.

SUTHERLAND NOW GENERAL MANAGER FOR SPLITDORF CO.

R. W. Sutherland was elected general manager of the Splitdorf Electrical Co., succeeding C. W. Curtiss, at a special meeting of the directors of the company held at New York Nov. 11. Mr. Sutherland, now head of the $10,000,000 corporation, has been connected with it for several years, as Pacific coast branch manager, European representative and, more recently, director of branches and secretary of the parent concern. Mr. Sutherland will retain his title of secretary and will carry on the dual duties of office. There will be no change in the production policy of the concern aside from general increase.

F. C. Manning has become vice president of the company and will continue in charge of the factory sales. At the same meeting the directors voted to declare the regular quarterly dividend of 1¾ per cent. on the preferred stock issued on or prior to Sept. 1, 1919, to holders of record as of Nov. 15, 1919.

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RIM MAKING A BIG INDUSTRY IN ITSELF.

Ground was broken this month at Akron, O., for an additional $1,000,000 plant in the group of Firestone factories. The new plant will house the Firestone Steel Products Co., which annually produces approximately 1,250,000 demountable rims for pneumatic motor car tires and 65 per cent. of the steel bases used in the United States for solid truck tires.

In the new plant the company will have facilities the most modern and efficient obtainable. The main building will be 860 feet long and 250 feet wide. Advantage will be taken of every opportunity to give the workers light and ventilation. The machinery, from large traveling cranes to small riveting devices, will be of the most improved type, with high protection efficiency.

Immediately in front of the main building will be a two-story office building, 170 feet long and 40 feet wide. It will be connected with the main building by covered bridges. A cafeteria for the entire factory force will be housed in the basement of the same building.

Rims manufactured by the company, all of which have been evolved by Firestone engineers, are: Type A a quick detachable, demountable rim; type B, a universal rim, used with either clincher or straight side tires; type C for straight side tires only, and type E a split rim for straight side tires.

NEWBY MADE FIELD MANAGER FOR BETHLEHEM TRUCKS.

Roy Davey, general sales manager of the Bethlehem Motors Corporation, Allentown, Pa., has appointed C. R. Newby, a veteran of the automobile field, as a field manager. Mr. Newby was for years connected with the former E-M-F, Studebaker and Maxwell companies as a district manager, branch manager and general sales executive.

WELL ORGANIZED SYSTEM.

So well organized is the motor truck delivery system of the big Chicago concern of Marshall Field & Co. that it is able to guarantee to make delivery within 50 miles of their store within 24 hours after purchase.

PENNSYLVANIA ROAD TESTS.

The highway engineers employed by the State of Pennsylvania are constantly studying formulas of concrete mixture and specimens of sand, gravel and stone found in various parts of the state. The tests are made at the highway laboratory at Harrisburg, where the samples are taken as the materials go into the contractors' concrete mixers.

There is also a stretch of test road being built outside of Harrisburg by the department under the direction of Deputy Commissioner Biles and W. A. Van Duzer, assistant in charge of maintenance. Here there are 21 different strips of 70 feet long each, in which varying proportions of concrete materials are used. This test is being conducted particularly with a view of cheapening road construction in concrete. Materials dug from various parts of the state are put in there and carefully observed. Those that pass the test are then available in different sections of the state for use on local roads, thus providing materials ready at hand with comparatively small cost of haulage, which is generally a big item in the cost. The department has a group of trained "prospectors" constantly touring the state to find available beds of the right kind of sand, gravel and other road building materials.

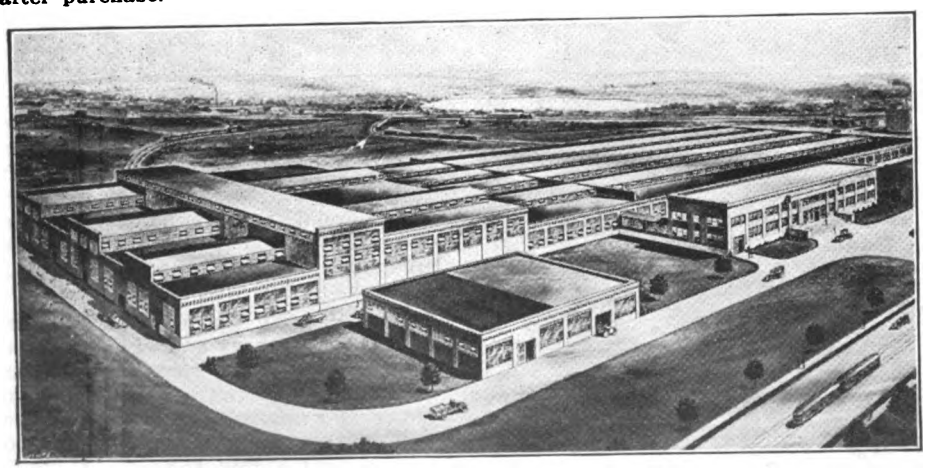
PERMANENT PARTS SHOW.

The city of Detroit has recently emphasized its claim to supremacy in the automotive industry of the country by a project to remodel a great building to be devoted to a permanent exhibit of motor parts and accessories and to the sales offices of their managers.

The building selected to house the exhibit, which will be known as the Motor Industry building, is the former Ford service building situated at Woodward avenue and Grand boulevard.

BUFFALO'S 1920 EXHIBIT.

It has been announced that the 1920 motor vehicle show in Buffalo, N. Y., will be held March 1-6 in the Broadway auditorium, as heretofore. This housing will give 44,000 square feet of floor space on the ground floor.



The New Plant of the Firestone Steel Products Co., Akron, O., as It Will Appear When Completed at a Cost of $1,000,000.

TRAILER MAKERS TO COOPERATE IN HAULAGE PROMOTION.

A number of important business matters were transacted at the October meeting of the Trailer Manufacturers of America held at New York. It was voted that the Trailer association cooperate with the Automobile Chamber of Commerce, the Motor and Accessory Manufacturers' Association, the American Automobile Association and the National Automobile Dealers' Association in conferences during the winter on matters of legislation affecting highway improvement, automobile thefts and regulation of the use of automobiles, motor trucks and trailers.

H. C. Fruehauf of Detroit and C. A. Geiger of New York were elected first and second vice presidents respectively, to fill the unexpired terms of L. E. McGlaughlin and R. C. Sykes, resigned.

The by-laws were amended to provide for regular meetings of the association in January, May and September, and that the annual meeting be held in January in New York during the week of the national automobile and motor truck shows.

E. W. Bennett was appointed to represent the association in regard to legislative matters on the Pacific coast.

Seven members of the Trailers' association have leased space for one year in the Grand Central Palace, New York, for an exhibition of their products in the permanent exposition being conducted by the International Tractor, Farm Implement and Trailer exchange.

Alfred Reeves, general manager of the National Automobile Chamber of Commerce, gave an address outlining the activities and methods of his organization, which is the pioneer association in the American automotive industry.

Reports were made showing a considerable improvement in the trailer trade since the first of the year, and purchases have been larger than during the first nine months in previous years.

ANNUAL GOOD ROADS MEETING.

The date for the eighth annual convention of the United States Good Roads Association has been set for April 12-17, 1920, and it will be held in Hot Springs, Ark. The United States good roads exhibit will be made in conjunction with this convention and the Bankhead National Highway Association will also combine with the United States association in the holding of its fifth annual meeting.

Six governors and four United States senators, as well as three cabinet officers, have promised to attend, and an official invitation is to be extended to the president of the United States.

DATE OF NASHVILLE SHOW.

The annual show of the Nashville Automobile Trade Association will be held in that city Feb. 9-14 next. Plans are being made for a number of original features, and it is believed it will be one of the most successful exhibitions ever held in the South.

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WILL BUILD AT MERIDEN.

The contract for what is virtually a new plant at Meriden, Conn., for the New Departure Manufacturing Co., one of the subsidiaries of the General Motors Corporation, has been let to the Aberthaw Construction Co. of Boston. The cost of the entire construction will amount to nearly $2,000,000 and includes the erection of four new buidings and the remodeling of an old building which was formerly used as a woolen mill, together with the construction of one new building at the West Hartford plant. Reinforced concrete will be used throughout and the work pushed as rapidly as possible.

The Meriden plant will cover a total floor area of 340,000 square feet and consists of two new three-story and basement buildings, measuring 82 by 302 feet, and two one-story and basement buildings, 67 by 302 feet. The old building, which is to be remodeled, is a three-story structure, 58 by 305 feet. At West Hartford the work consists of one two-story building with basement and sub-basement. Both jobs will be carried on simultaneously.

FREMONT MOTORS ORGANIZED.

The Fremont Motors Corporation has been organized at Fremont, O., for the manufacture of trucks and passenger cars, with a capital of $2 000,000. The new concern has purchased the plant of the Burford Motor Truck Co. and will continue making the Burford truck. It will also specialize in a four-passenger car, which will sell at $1285.

Fred M. Guy is sales manager and C. Whitmore, formerly of the Packard Motor Car Co., is in charge of the factory management of the new company.

RESIGNS FROM GENERAL MOTORS.

W. C. Durant, president of the General Motors Corporation, has confirmed the resignation of Walter P. Chrysler, acting vice president in charge of production and a member of the board of directors of the General Motors Corporation. It is understood that Mr. Chrysler intends to engage in business on his own account.

FULTON'S OCTOBER RECORD.

The Fulton Motor Truck Co., Farmingdale, Long Island, N. Y., is reported to have done the largest business in its history in the month of October, during which time 250 trucks were turned out, and the indications are, according to officials of the company, for an even larger business in November.

STANDARDIZED WINDSHIELDS.

The International Motor Co., New York, maker of Mack trucks, is now prepared to furnish standardized wooden windshields for its model AB and AC trucks at an additional net price of $40, mounted, for the former, and $50, mounted, for the latter.

SELDEN'S NEW OFFICERS.

At a meeting of the stockholders of the Selden Truck Corporation in Rochester, N. Y., Nov. 4, the following officers were elected:

President, George C. Gordon; vice presidents, William C. Barry, R. H. Salmons, Hal T. Boulden, W. F. Reynolds; treasurer, E. B. Osburn; secretary, S. P. Gould; asistant, F. J. Kolb. Other members of the directorate were Charles H. Stearns of Rochester and R. H. Bollard of New York City.

Mr. Reynolds will look after the Selden interests in foreign countries, making his headquarters in London, England, and Mr. Bollard will represent New York financial interests.

This was the first meeting of the combined Selden companies, the manufacturing of Selden trucks which was formerly carried on by the Selden Motor Vehicle Co., having been recently taken over by the Selden Truck Corporation.

The reports submitted indicated the healthy condition of the company and plans were approved for the enlarging of the plant.

APEX DOUBLES CAPACITY.

The Hamilton Motors Co., Grand Haven, Mich., formerly the Panhard Motors Co., maker of the Apex truck, has increased the production facilities of its truck plant at Grand Haven by building an addition which doubles the former capacity. This enlargement has been due in a great measure to the quick growth of the export business of the Hamilton Motors Co. and, to handle this, it has also been found necessary to open an export office in New York, which has been placed in charge of C. B. Rice, who has had much experience in this line of work.

EISEMANN AGAIN EXPANDS.

In order to take care of the vast amount of government business during the war, the Eisemann Magneto Corporation, Brooklyn, N. Y., enlarged its manufacturing facilities to a great extent. After the armistice was signed it was planned to use the increased space in producing the new magneto generator, which was held up on account of war time exigencies. The demand for the company's products, however, has not abated to the pre-war basis, but on the contrary has increased it so large a degree that it has again become necessary to add to the manufacturing floor space, as well as to augment the factory personnel.

RAINIER NEW DISTRICT SALES MANAGERS.

The Rainier Motor Corporation, with factory at Flushing, Long Island, N. Y., and New York offices at 225 West 58th street, has appointed the following district sales managers:

New England, J. B. Lakin, Boston, Mass.; New York State, W. A. Fisher, Rochester, N. Y.; Middle West, as far as Omaha, Neb., Charles H. Gresslee, Chicago, Ill.; Maryland, Delaware and District of Columbia, George F. Brandenberg, Baltimore, Md.; Pennsylvania, S. E. Bennett, Harrisburg; southern Ohio, Tennessee, Kentucky and West Virginia, R. B. Miller, Cleveland, O.; Texas, Louisiana, Arkansas and Oklahoma, K. J. Leach, Dallas, Tex.

New distributors have been named as follows:

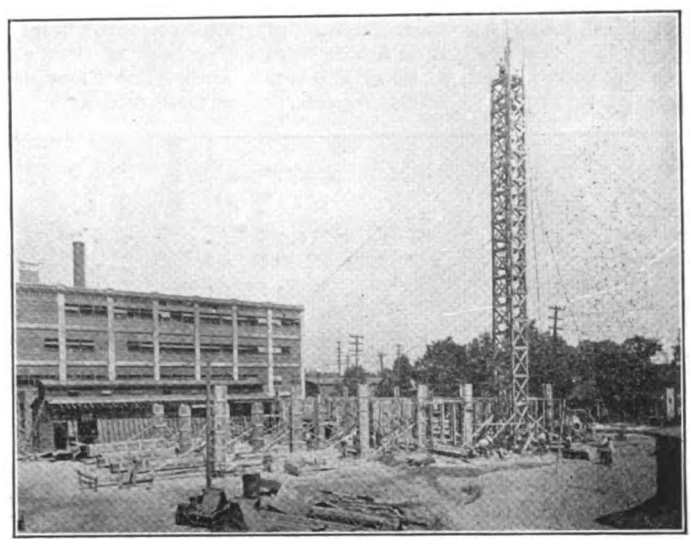
Clyde Car Canadian Co., Ltd., Toronto, Ont., Can.; Henry Mossbach Automobile Co., Seattle, Wash.; Service Garage, Portland, Ore.; Russell Hawkins Co., Atlanta, Ga.; Donahue Motor Truck Co., Scranton, Pa.; Scott Motor Truck Co., Brooklyn, N. Y.; Erie Motor Car Co., Paterson, N. J.; Kings-Block Garage, New Brunswick, N. J.; Anthracite Motor Service Co., Hazelton, Pa.

BIRMINGHAM TRUCK DEALERS.

An organization of truck dealers has been formed at Birmingham, Ala., to promote the mutual interests of members in the rapid development of the truck industry in that state. Practically every dealer in the Birmingham district has joined the new organization, which is called the Truck Dealers' Association of Birmingham. Earl Ford of the Cruse-Crawford Co. is president.

HAS OPENED EXPORT OFFICE.

The Napoleon Motor Co., Traverse City, Mich., manufacturer of Napoleon trucks, has opened an export office at 100 Broad street, New York, to care for its increasing foreign business. The office will be in direct charge of the American Motors Co.



Constructing the New Plant of the Piston Ring Co., Muskegon, Mich., to Meet the Demands of Greatly Increased Business.

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TOURING WISCONSIN TO PROVE TRAILER UTILITY.

L D. Frint, president of the Frint Motor Car Co., Milwaukee, Wis., organized a tour of Wisconsin with an Oldsmobile truck hauling a train of trailers to prove to the people of the communities through which the train passed the utility of trailer units. He planned a 2000-mile journey and arranged with the Milwaukee-Warner Co., state distributor of Warner trailers, built by the Warner Manufacturing Co., Beloit, Wis., to supply five units. To add to the novelty of the demonstration Mr. Frint made an airplane flight from Milwaukee to Beloit to complete the factory arrangements.

The trailer train decided on is shown in the accompanying illustration, and consisted of an Oldsmobile truck, a 3000-pound four-wheeled trailer, a 2500-pound, two 1500-pound and one 1200-pound two-wheel trailers, designed for haulage with automobiles. Before the start the truck was tested with the four-wheeled trailer loaded with 3500 pounds of chain, and with this load it ascended a seven per cent. grade.

The purpose was to keep an accurate record of the mileage driven during the tour, the fuel and lubricant consumed, the condition of the roads, the weather, and other information of a desirable character, and to have the tires inspected when the drive was completed. This was to be compared with other data to establish tire conomy.

Special claims are made for the design and construction of Warner trailers, which have exclusive spring suspension, adjustable drawbars and hitches, Warner coupling devices, and the bodies are built with matched flooring. Statement is made that they tow very easily, without dragging, bumping or jolting, and without shock when stopping and starting, very important factors in trailer haulage.

EXPORTS TO SOUTH AMERICA.

The National City Bank of New York states that exports to South America from this country in 1919 will exceed those of any earlier year by more than $100,000,000. Published reports to the effect that South American buyers of merchandise from the United States were cancelling orders seem to be greatly exaggerated, according to official reports.

NEW MECHANICAL BUILDING FOR FIRESTONE TIRE.

Ground has been broken for the construction of a new building at the plant of the Firestone Tire & Rubber Co., Akron, O., on a site south of the No. 2 works. It will be three stories, of reinforced concrete, with a frontage of 325 feet in Main street and a depth of 315 feet. The floors will be wooden blocks laid on reinforced concrete.

Careful attention has been given to lighting, ventilation and sanitation and approximately 80 per cent. of the wall areas will be glass. The most advanced construction has been incorporated in the plant. For example, traveling electrical cranes will carry heavy machinery and all mechanical equipment will be the best that can be produced.

The cost of the structure will probably exceed $400,000. It will house the electrical, machine, pipe, carpenter, pattern and tin shops, so that all work of these departments now done in various buildings will be coordinated under one roof. This is expected to result in a large saving in time and labor.

HYMAN JOINS STANDARD TRUCK CO. AS ADVERTISING MANAGER.

Wallace C. Hood, general sales manager for the Standard Motor Truck Co., Detroit, has announced the appointment of C. C. Hyman as advertising manager, succeeding J. G. Cashin, who has joined the organization of the Acason Motor Truck Co. of that city. Mr. Hyman was formerly connected with the Campbell-Ewald Co., advertising agent, and recently returned from overseas, where he served with the American Expeditionary Force, and where he added materially to his knowledge of truck transportation.

SHOW ROOM FOR ALL-AMERICAN.

The All-American Sales Corporation, 1826 Broadway, New York, has opened a new sales room in that city, where it has excellent facilities for showing the All-American one-ton truck, made by the All-American Truck Co., Chicago. J. J. Johnston, Jr., is secretary and manager of the All-American Sales Corporation, which also handles Case automobiles, but a separate show room is maintained for the passenger car.



Train of Oldsmobile Trucks and Five Warner Trailers at Warner Factory at Beloit Before Start of State Tour of 2000 Miles.

FAIRFIELD MANUFACTURING CO. ENTERS AUTOMOTIVE INDUSTRY.

The Fairfield Manufacturing Co. has been organized at Lafayette, Ind., to manufacture differential and bevel gears for power vehicle construction, and the officers, all of whom are prominent in the Ross Gear & Tool Co. of Lafayette, are: D. L. Ross, president; J. W. DeCou, vice president and general manager; Edward A. Ross, secretary; George C. Kumming, treasurer, and David E. Ross, consulting engineer.

The formation of the company is the result of the great growth of the Ross Gear & Tool Co. and a part of the Ross production facilities have been devoted to manufacture of differential and bevel gears which will now be made by the new concern. The demand for Ross steering gears has been so increased that all the facilities of the Ross plant were required for production. In February, 1919, 120 power truck manufacturers were using Ross units for construction, and the first of this month the number had increased to 150 with a much greater demand than ever before.

All patents, machinery, etc., for making bevel gears, formerly owned and controlled by the Ross Gear & Tool Co., have been taken over by the Fairfield company, which starts with a large volume of work assured. It has acquired the plant of the Lafayette Engineering Co. and will probably be in full production by Jan. 1. All service parts for differentials formerly made by the Ross company will be produced in the new Fairfield factory.

The policies of the Fairfield company will be directed in the conservative and constructive channels followed by the Ross company. D. L. Ross is president, Edward A. Ross secretary (both hold similar positions with the Ross company), D. E. Ross, who invented and designed the Ross steering gear, will serve as consulting engineer for both corporations. The active management of the company will be directed by Mr. DeCue and Mr. Kumming. For the past year and a half the former has been factory manager for the Ross company, and prior to that time he was associated with the Smith Form-a-Truck company, and for 18 years with the Thomas B. Jeffery Co., first as purchasing agent and later as factory manager. Mr. Kumming, who for 13 years was assistant treasurer of the Ross company, will have charge of the business management and the office organization.

BYRUM SUCCEEDS SYKES AS TROY TRAILER SALES MANAGER.

R. C. Sykes, general manager of sales for the Troy Wagon Works Co., Troy, O., has resigned that position to enter a personal business in which he is a controlling partner.

Mr. Sykes' successor is Ike S. Byrum, who has been with the Troy Wagon Co. for the past eight years as salesman, special representative and more recently as assistant to Mr. Sykes in the sales management.

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CROSS-CONTINENT MTC MARCH HARDEST TEST OF ARMY TRUCKS

HAD the trans-continental march of the Motor Transport Corps, U. S. A., from Washington to San Francisco been an industrial or commercial undertaking, instead of a plain army "stunt," it would have been given world-wide publicity. Instead, however, the newspaper press of the cities and towns through which the convoy passed in its march from coast to coast gave some attention the day of the arrival of the command and as promptly turned to other subjects when the last truck had trailed out of the community.

But as a matter of fact the march made by the Motor Transport Corps was probably the best education that the army officers ever had in highway transportation. They had, of course, the advantage of trucks maintained by good mechanics operating under army discipline, and the machines were in the best of condition, being groomed for the march, so to speak. In this respect the results were as a whole superior to might be expected were one to take the average of the trucks operated by industrial or haulage concerns, which are usually kept in service until overhauling is necessary and they are subject to varying forms of failure because maintenance is seldom to a high standard.

But at the other hand there is little probability that trucks would be used on such conditions. The highways ranged from splendidly kept macadam, concrete and brick in the extreme East to mere country roads, cart paths, trails and absolutely no roads at all, for in the West the drivers were in many instances compelled to seek what appeared to be the route of least resistance, and some times the trucks simply sunk into the surface of the ground and kept sinking until they were extricated by the crews by all manner of expedients, as well as towing.

Engineers Corps Pioneered the Way.

Much of the credit for the march being made is due to the detachment of army engineers that led the van. It was the duty of the detachment to find the route, strengthen bridges, remove rocks and generally clear the way for the convoy that followed. The commanding officer was Lieut. Col. McClure, a veteran of the European war, and the train consisted of five Mack AC 5½-ton trucks, the heaviest vehicles of all, which were used by the Engineers Corps detachment, and the Motor Transport Corps equipment included standardized Liberty three-ton trucks, three four-ton Riker trucks, two 1½-ton Packard trucks, two 1½-ton White trucks, two 1½-ton Garford trucks, two three-ton F-W-D trucks, an Ordnance four-wheel driven tractor, GMC ambulances and Cadillac, Dodge and White touring cars.

The convoy was started from Washington, D. C., July 7, and the plan was to make the march by easy stages, reaching the Presidio at San Francisco, Sept. 1, and the primary object was to recruit men for the Motor Transport Corps, and incidentally to test the trucks and to experiment in long-distance convoy work on give and take American roads. Besides this, there was to be a study of general transport service for the direct benefit of the Motor Transport Corps, officers being detailed for this particular duty. The train lost six days on the journey and did not reach San Francisco until Sept. 6.

Largest Trucks Headed the Convoy.

The convoy was led from start to finish by the detachment from the Fifth Engineers Corps, U. S. A., setting the pace with its trucks and making the roads or trails passable for the train. Some of the Mack trucks were loaded beyond capacity, and with these trucks a wide track was broken for the wide-gauge machines on dirt roads, often rutted by the narrow track horse vehicles and passenger cars.

The mileage by odometer for the train was 3425 in the 56 days of travel, this being an average of 61 1/6 miles a day, and the maximum day's mileage was 87. The convoy followed the Lincoln Highway so far as this was possible, but made occasional detours, one of the most important of these being made at Ogden. From Washington to Omaha and from the California line West the roads were generally good, but between these two sections they were bad, if not worse than bad.

Towing Tractor a Heavy Load.

The train carried with it several auxiliaries, one of which was a standard Ordnance tractor, which was to be used when trucks were hopelessly mired, which was part of the freight of one of the Mack trucks. The weight of the tractor and truck was 24,840 pounds, which made it the heaviest unit of the train. There were several solo and sidecar motorcycles for the dispatch bearers and orderlies, and there was a Cadillac chassis equipped with a searchlight for making illumination when there was night work on bridges, roads or during demonstrations when the train went into camp. In addition there was a standard engineer pontoon, carried on a four-wheel trailer, which was to be used in the event of an improvised bridge being necessary.

The motorcycles were extremely useful as long as the roads were good, but when the trails reached the deserts and mountains the machines were loaded on the trucks. The pontoon was hauled as far as Omaha, where, because of its length, in excess of 30 feet, it could not be carried further with certainty that it would be practical equipment.

Engineers Had Repair Trucks.

Of the Macks, three were cargo trucks that carried supplies, plank, steel girders and other bridge building and road construction tools and material, and one of these carried the tractor. A fourth truck was a truck machine shop, equipped with a lathe, drill press, grinder and other tools, driven by a five KW electric generator, the power being furnished by an independent engine. The fifth truck was fitted as a blacksmith shop with a forge, anvils, welding outfit and other metal working equipment. All of these were standard vehicles of the Engineers Corps, which had been developed during the European war on Mack chassis.

In accordance with army regulations the engineers detachment was separate from the Motor Transport Corps command, the former being in charge of Capt. A. E. Ritchie and the latter under Capt. McMahon. The Motor Transport Corps had 40 mechanics to care for the trucks and cars and motorcycles, but the trucks of the engineers had no mechanics other than the drivers and a representative of the International Motor Co., who accompanied the command during the march. But the duty of the one civilian was not severe, as may be judged from the fact that while assistance by the mechanics of the Motor Transport Corps on the engineers trucks was not permitted, the Mack mechanic could and did help the regular army mechanics with repairs.

Towing Ditched Trucks Regular Work.

The Mack trucks were frequently used to haul the machines of the other detachment back to the roads when they became ditched or were without traction in mud or sand. The Ordnance tractor, a four-wheel driven machine, at one time became so mired that it could not be extricated with its powerful winch and two Mack trucks were coupled and dragged it on to the road. In the train was a total of 72 vehicles, most of which were class B trucks, and there were more Macks than any other vehicle sold commercially.

The Mack trucks were chain driven, as will be noted from the series of illustrations that accompany this article, and though they were heavily freighted on the good roads they out distanced the other machines. Capt. McMahon was compelled many times to request Capt. Ritchie to keep to a slower pace. Near Wooster, O., one night Capt. McMahon addressed his drivers and asked them to do all they could to keep up to the engineer detachment trucks. But the drivers were not able to do this.

Changed Sprockets to Reduce Speed.

The fact that the Mack trucks would gradually crawl away from the remainder of the train necessitated dispatching orderlies on motorcycles to order the drivers to stop, and wait until the remainder of the convoy appeared.

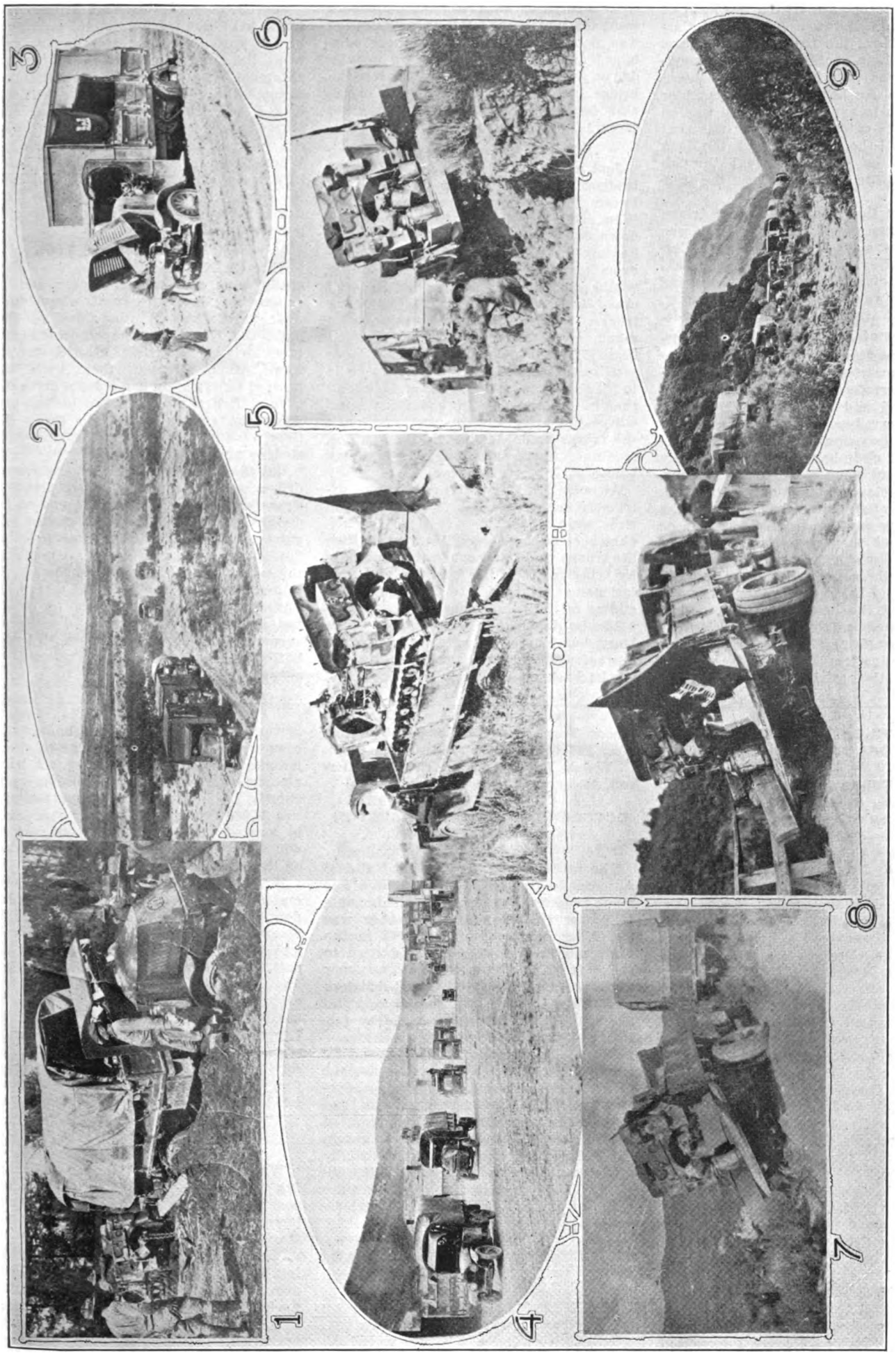
The condition became such that Capt. Ritchie demanded that the Mack mechanic either change the sprockets or adjust the governors so that the trucks could not be driven as fast, and at Dennison, Ia., the Standard Engineers Corps 15-tooth sprockets were changed for 13-tooth sprockets and the speed of the trucks reduced proportionately. But later on when the roads became bad the engineers trucks, though breaking the

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Motor Transport Corps Transcontinental "Hike." 1—On a Perfect Pennsylvania Road; 2—Motorcycle Couriers in Service; 3—Fair Roads in Ohio, but the Good Roads Ended in Pennsylvania; 4—Seven Hours Making a Four-Mile Detour Between Wooster and Bucyrus, O., the Convoy Delayed by Trucks Sliding Into Ditches; 5—A Noon Stop for Lunch in an Iowa Town; 6—Bridge Deck Broken Off by Truck Weight Between Green River and Fort Bridger, Wyo.; 7—Rear Wheels of Truck Hauling Ordnance Tractor Crashed Through Bridge Near Fort Bridger; 8—Unloading the Tractor to Extricate the Truck with Jacks; 9—Driving Through Dust Clouds in Wyoming Desert.

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Crossing the Rocky Mountains with the Convoy: 1—Trucks Sunk in the Sand in the Park Near Salt Lake City; 2—With Smaller Sprockets the Macks "Lost" the Line They Led Between Orr's Ranch and Gold Hill in the Salt Desert; 3—Cooling the Engines in the Salt Desert; 4—Gold Hill, Utah, Where Bad Road Necessitated a Night Camp; 5—Bull Dog Mack, Weighing 24,480 Pounds, Sinking in Desert Sand; 6—Hunting for a Road in the Desert Was Question of Luck; 7—Hauling Out a Truck on a Crumbled Road Edge Between Ely and Eureka, Nev. 8—Just a Drop Through a Bridge Deck, a Very Frequent Happening; 9—A Boulder-Strewn Road in Nevada Where the Tires Crept.

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trail, again crept away from the head of the caravan. Between Fallon and Carson City, Nev., the trucks made a pace that the others could not follow, though the road was very bad, and the leaders were halted for hours for the remainder of the train to appear. The road was so bad that the caterpillar tractor was sent back to haul the trucks through the deep sand, yet the engineers went through with very little assistance from the tractor.

The only time the tractor was driven under its own power while the train was marching was for 11 miles between Carson City, Nev., and Lake Tahoe, Cal., where the officer in command, believing the weight was a needless load to carry, ordered the tractor driven up the grade.

Entire Loss of Traction Held Up Trucks.

The passenger cars were frequently quite as powerless on bad roads and the engineers trucks were sent to haul them out of mud and sand. The command helped every type of vehicle whenever there was occasion and very rarely was there need of it having help. The only obstacle was when a two-wheel or four-wheel vehicle could not obtain traction. There were times when one of the trucks would draw another from a mudhole or cave in, but they were independent of the Motor Transport Corps.

Leading the convoy the trucks generally broke the bridges, for they were the largest and the heaviest loaded, and if they crossed safely the other trucks could follow. Generally speaking a superficial examination of the bridges would not prove their strength, so that when weak structures were reached the leaders went through them. But in no instance was a vehicle damaged by these mishaps, and the machines were usually driven away by their own power after the bridge had been repaired by the engineers for the remainder of the train to cross.

One Day's Bridge Smashing.

Just as an illustration, on one day 16 bridges and 31 culverts were broken between Green River and Fort Bridger, Wyo., and three of these were broken down by the leading truck, which was hauling the tractor. In most cases, however, it would cross safely, but the strain would so weaken the bridge that it would crash under the shocks of the following trucks. So much impressed was the commanding officer, Lieut. Col. McClure, that he said: "No matter how many bridges you break through, all we have to do is to jack them, give them a kick and they're off again." In some instances where the bridges were obviously weak the trucks made detours through gullies, fording streams and climbing steep clay banks.

At one time where the roads were extremely muddy the front wheel rims and tires were wound with rope so the machines could be steered, and even then the trucks could be kept in the road only by tying ropes to the bumpers and having men at either side to keep them from sliding off into the ditches. At one time a 12-mile detour was made and in seven hours but four miles were made through loss of traction and work hauling the trucks back on the road.

Shortly after passing Fort Bridger the truck with the tractor started across a bridge with a 60-foot steel span, and when the front wheels were on the far abutment the rear wheels dropped through the deck. The tractor was unloaded and the truck was jacked and planks placed under the wheels. It was run forward and was found undamaged. When parked just outside of Salt Lake City one of the engineer trucks sunk into the sand, but with plank under the traction wheels it pulled out with its own power.

Wheel Shocks Loosened Tires.

Through Nevada the roads were generally very narrow and rocky, and in driving on these the front wheel tires struck the stone on the sides of the path, the blows from innumerable contacts driving the tires inward on the wheel rims, although they were the pressed on type. In some day's drive the tires shifted as much as two inches, and when the convoy went into camp the tires were driven back on the rims with sledges and with bar levers.

But the trucks of the entire train were driven over the roads and arrived in San Francisco in condition to continue on indefinitely, and the experience gained was extremely beneficial. The knowledge of the officers was greatly broadened and the personnel of the convoy became self reliant and resourceful. The march afforded wonderful opportunity for training and the trucks were used quite as successfully without roads as with them, but the movement was necessarily slower.

NEW BETHLEHEM TRUCK DISTRIBUTORS AND DEALERS.

The Bethlehem Motors Corporation, Allentown, Pa., during October made sales contracts with the following concerns: Distributors—J. M. Hutton, Chicago; A. H. Koenicke, Houston, Tex.; Roamer Motor Car Co., Huntington, W. Va.; C. E. Morse, Marianna, Fla.; Hemming Wagon Works Co., Meridian, Miss.; Manypenny-Scott Motor Co., Philadelphia, Pa.; T. E. Knowlton, Syracuse, N. Y.; City Garage, Tupelo, Miss. Dealers—Farm Power Machinery Co., Rochester, N. Y.; John Pembroke, Monticello, Ill.; Nelson Bros.-Strom Sales Co., Racine, Wis.; Bray's Auto Exchange, Chillicothe, O.; F. D. Hawke, Waynesville, O.; Morse-Lymen Auto Sales Co., Flint, Mich.; Auto Sales Co., Greenville, Miss.; S. H. Heavrin & J. J. Trefz, Owensboro, Ky.; Sandlin Supply Co., Richmond, Ky.; Dykes Hardware & Furnitnre Co., Delhi, La.; Union Sales Co., Bridgeport, Conn.; Peak's Garage, Selma, Cal.; Climax Motor Sales Co., Wilmington, Del.; Standard Auto Co., New Kensington, Pa.; J. L. Maxwell, New Castle, Pa.; Walter's Garage, Coraopolis, Pa.; Clackamas County Tractor & Auto Co., Oregon City, Ore.; John C. Mignor, Rosebury, Ore.; Stanley Chapman, Winnemucca, Nev.; A. T. Henninger, Belleville, Ill.; V. J. Trares, Edwardsville, Ill.; National Trail Garage, Highland, Ill.; G. C. Williams, Corso, Mo.; J. W. Bandy, Hayti, Mo.; McCoy & Rogers, Perry, Mo.; Mason Transfer & Storage Co., Windsor, Mo.; Fidelity Motor Co., Enid, Okla.; D. C. Welsh, Lawton, Okla.; R. D. Henderson, Anderson, S. C.

OCTOBER SHIPMENTS LARGEST IN INDUSTRY'S HISTORY.

The traffic department of the National Automobile Chamber of Commerce has made report that the car load shipments of power vehicles during October was 29,742, as compared with 10,667 in the same month in 1918, and in addition to these in the Michigan-Toledo territory 12,457 vehicles were delivered to dealers who drove them to destination, and the shipments from Detroit and nearby factories by water totaled 3697 machines.

This is a new record, for the shipments and drive-aways were equivalent to 4750 car loads, indicating the production in October was 34,492 car loads. The largest previous month's shipments of record was 29,622 car loads in March, 1916. Statement is made that the traffic department is actively in touch with railroad officials on plans for shipping automobile freight after the railroads are returned to private management.

FITZ JOHN-ERWIN CO. WILL BUILD TRUCK BODIES.

The Fitz John-Erwin Manufacturing Co. has been incorporated at Muskegon, Mich., with capital of $100,000 to engage in the manufacture of truck bodies and cabs which will be sold direct to truck manufacturers. Several contracts have already been secured and production will shortly be begun. The initial building has 25,000 square feet of floor space and is located on an eight-acre site, which will afford abundant space for expansion as the output increases.

H. A. Fitz John is president and general manager, W. C. Powell is vice president, L. B. Erwin secretary and T. H. Hume treasurer. Mr. Fitz John is well known in the industry, having been associated with the Hudson Motor Car Co. and with the Continental Motors Corporation as production manager, and is well qualified to direct the factory production. During the European war he was director of purchases and in charge of production for the Dayton-Wright Airplane Co., Dayton, O. His associates are men of long business experience.

CARRYING ITS HELP.

When the New Departure Manufacturing Co., Hartford, Conn., was recently considering the purchase of a new plant. it was confronted with the problem of the transportation of some 200 employees 10 miles out from the city night and morning. After calling in an expert to look over the situation it was decided to put a fleet of 13 Reo motor busses into service, figuring on 12 being kept in continual operation.

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RIGHTMIRE RETIRES FROM THE WINTHER TRUCK CO.

W. D. Rightmire, who was for a considerable time associated with the Winther Motor Truck Co., formerly of Winthrop Harbor, Ill., but now of Kenosha, Wis., has retired from that concern. His office, that of secretary, has been succeeded to by George Drake Smith. Mr. Rightmire, who is second vice president of the National Association of Motor Truck Sales Managers, has not announced his future plans.

TO BEAT THE HIGH COST OF GARAGING IN CHICAGO.

Incensed because the prices for garaging cars had been increased from $15 to $19 a month, a considerable number of residents of Edgewater, a suburb of Chicago, after comparing notes and determining the increases were not justified, have determined to establish a cooperative garage which is expected to result in substantial economies for all.

HOOVEN RADIATOR PRODUCTION AT PACE WITH DEMAND.

Under the management of L. W. Wright, its president, the business of the Hooven Radiator Co., Chicago, has greatly increased and the production facilities have been added to to keep pace with the demand. While the product is exceptionally satisfactory constant endeavor is made to improve it.

Recently the production was placed in charge of Joseph Spery, who has increased it 300 per cent. and he has devoted considerable time to perfecting tools, dies and special machinery, which work he specialized. Mr. Spery is now developing facilities which will undoubtedly economize time and labor and will turn out radiators which will have even greater efficiency than those so favorably known.



Joseph Spery, Manager of Production, Hooven Radiator Co., Chicago.

WILLIAMS JOINS SANFORD TRUCK AS SALES MANAGER.

Announcement is made by the Sanford Motor Truck Co., Syracuse, N. Y., builder of Sanford trucks, of the appointment of C. E. Williams as sales manager. Mr.



C. E. Williams, General Sales Manager, Sanford Motor Truck Co.

Williams was for a considerable period associated with the Selden Truck Corporation and the Selden Truck Sales Co. as assistant to Hal T. Boulden, the director of sales and advertising. He is well known in the industry and to the trade and by training and experience is well qualified for the supervision of the sales organization of the Sanford company.

PERCIVAL DODGE NOW DENBY TRUCK SALES MANAGER.

Capt. Percival Dodge is now sales manager for the Denby Motor Truck Co., for which work he has been trained for five years under the direction of Garvin Denby, president of the concern. Dodge started his training wearing overalls and worked at a bench, then at assembly and inspection, next in the experimental department, became a salesman, was district manager for Michigan, and after a term in the accounting department he entered the army as an aviator and served at flying fields in this country and six months in France.

Upon his return to the company he was successively made assistant treasurer, assistant sales manager, and now is in charge of all domestic sales. His progress in his work and his enthusiasm justified his promotion.

ADOPTS HIRE-PURCHASE PLAN.

The War Motors Association, London, England, has arranged to supply war service motor trucks on a hire or purchase plan. The amount realized from the sale of government owned motor trucks, etc., during July, reached the record amount of nearly $6,000,000.

DRUAR .CHIEF ENGINEER FOR STANDARD MOTOR TRUCK CO.

F. J. Druar has become associated with the Standard Motor Truck Co., Detroit, as chief engineer. His experience dates to the days of single-cylinder vehicles when he was with the E. R. Thomas Co. of Buffalo, N. Y. For the past eight years he has been connected with the engineering department of the Packard Motor Car Co., Detroit, his work being divided between the experimental, carriage and truck divisions, but for the past year he has been engineer for the truck special equipment department. Mr. Druar has been active in the industry practically since its inception and he is unusually well qualified in his profession.

COMMERCE MOTOR CAR CO. WILL ADD TO PRESENT PLANT.

The Commerce Motor Car Co., Detroit, builder of Commerce trucks, has acquired two acres of land adjoining its present property, this including a corner lot at Mackie and Green streets. Statement is made that as soon as the additions now being made to the plant are completed new buildings will be erected on the land just purchased. As the new building will practically all be given over to production the output of the company for the coming year will probably be greatly increased.

NICOL NOW MANAGER OF GARFORD BRANCH AT CHICAGO.

Grant C. Nicol, who has been identified with the power truck industry in Chicago for a number of years, has been made manager of the Chicago branch of the Garford Motor Truck Co., assuming the duties of the position Nov. 1. He succeeded George Crane, who resigned after an association of several years with the company. The management carries with it supervision of a dealer organization in Chicago territory.



Grant C. Nicol, Manager Chicago Branch, Garford Motor Truck Co.

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TRUCKS SAVE FOOD SHOW.

The New York food show was recently scheduled for a two weeks' run in the 12th Regiment Armory, but the expressmen's strike, the longshoremen's strike, to say nothing of several others, would practically have paralyzed this show and precluded its opening had not the exhibitors made use of the motor truck in the emergency. The week before the opening shipments came by truck from points as far distant as Chicago, South Bend, Ind., Minneapolis, Buffalo and Baltimore, as well as from numerous points in New England and other parts of the East.

Veritable fleets of Macks, Maxwells, Oldsmobiles, Pierce-Arrows, Reos and Stewarts appeared at the armory to deposit their big loads, which included some very elaborate exhibits. In some cases exhibitors who had shipped by express found that their exhibits were tied up or could not be located and hastened duplicate exhibits by motor truck to New York in time for the opening of the show.

PERSONNEL OF FULTON CO.

The Fulton Motor Truck Co. announces that its new executive offices are located at 1710 Broadway, New York City, and its present personnel is as follows:

President, George C. Sherman; vice president and treasurer, F. G. Saunders; vice president in charge of production, W. R. Bamford; sales manager, C. M. Kraham; manager of sales promotion department. H. D. Frazee; assistant advertising manager, C. S. Weiss.

BUS CARRIED THEATER PARTY.

A theater party of 28 Easton, Pa., women who recently attended the matinee at the Hippodrome, New York, made the trip in a Garford omnibus, manufactured by the Garford Motor Truck Co., Lima, O. The distance, 78 miles, was covered in 4½ hours and the return trip in four hours.

FARMERS FAVOR PASSAGE OF THE TOWNSEND BILL.

If letters recently received by the officers of the National Grange can be considered as a criterion, farm sentiment throughout the United States is overwhelmingly in favor of government participation in highway construction as proposed by the Townsend bill now pending in Congress.

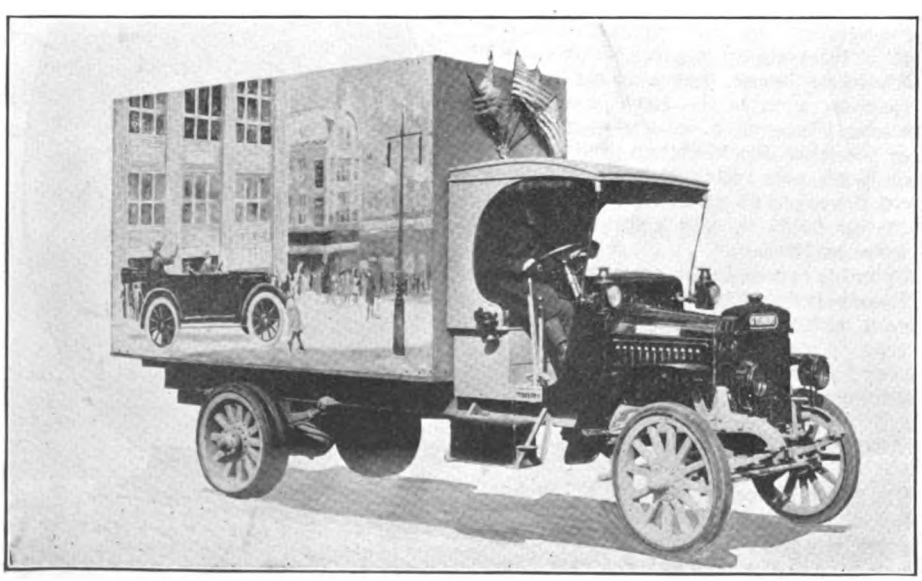
Not long ago the Washington representatives of the National Grange sent out a letter to every state official of that organization in which was enclosed a letter from Senator Charles E. Townsend calling attention to his measure for a national highway system and a federal highway commission and explaining the reasons which he felt made necessary a broader national road policy.

Responses to this communication have thus far been received from local granges in 21 states and the proportionate result has been 12 votes to one in favor of the adoption of the Townsend bill. The replies range from Maine on the north down to West Virginia and as far west as Washington and Oregon. In each case the reply has been made only after the matter has been considered by the grange membership before which the subject was placed.

For the most part the writers were content to give unqualified indorsement to the measure, but where more detailed letter were written a feeling was disclosed that the government is big enough to take care of the national highway itself and that it should seek to do so as rapidly and as economically as possible. The opinion was further expressed that it is only through such a policy that a national system can be obtained which will not overburden the man who lives near the road.

HANDLES RAINIER PUBLICITY.

Putnam Drew, well known in the automotive publicity field, has joined the staff of the Rainier Motor Corporation, New York, as publicity director.



Atterbury Truck with Novel Body Used in Promoting a "Cross-at-Crossings" Campaign by the Stability Motors Co., Philadelphia.

RECORD TRUCK PRODUCTION.

The Reo Motor Car Co. made what is thought to be a daily production record for a single truck model at its plant at Lansing, Mich., recently when over 100 Speed Wagons came off the assembly chain in a nine-hour working day. While this production was above the average for this model, it was not the result of a sudden spurt, but rather of a continuous and sustained effort to meet the increased demand for this vehicle.

The shortage of railroad freight cars has not checked the development of the business insofar as this particular product is concerned, as buyers have found it no particular hardship to drive their machines overland as, it is claimed, the Speed Wagon, while a real truck, is both fast and easy riding. Fleets have been going over the road from Lansing to points as far distant as Shreveport, La.; Birmingham, Ala.; Atlanta, Ga.; Toronto, Ont., Can.; Hartford, Conn.; Boston and Philadelphia, and single deliveries were made by this method in one day recently to Charlotte, N. C.; Memphis, Tenn.; Pittsfield, Mass., and Dubuque, Ia.

BODY FOR HANDLING BRICK.

The General Motors Corporation, Pontiac, Mich., has designed a special truck body for the convenient handling of building brick. The truck, with its body equipment, hauls 1000 brick and dumps the whole load in a perfect pile without any handling. The part of the body containing the brick is deposited upright on the ground by the mechanism of the truck and then, by loosening a few pins, the container can be taken away without disturbing the symmetry of the pile of brick.

PRODUCTION OF TRUCKS.

The estimate has been made by the National Chamber of Commerce of the production of motor trucks in 1919 for civilian use as 282,394, of which number 54.3 per cent. will be trucks of one-ton capacity or less and 31.4 will be of 1½ to 2½-ton capacity, and 85.7 per cent. will be of sizes which are adapted to farm use.

A CEMETERY BUS.

The Mount Scott Cemetery and Crematory Association has put into service a motor bus especially constructed by the General Motors Corporation, Pontiac, Mich., which is reported to perform the sad and solemn round of duty required of it with efficiency and dignity.

OIL COMPANIES ORGANIZED.

The Wall Street Journal states that oil companies numbering 157, with an aggregate capital of $613,600,000, were organized in October compared to $615,510,000 in September and $42,910,000 in October, 1918.

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Service Most Important Problem Industry Must Meet

Convention of Managers at Detroit Develops Need of Standardization, Through Factory and General Policies, and of Training Men for Motor Transport Corps Reserve.

Detroit, Nov. 12.—That service is the most important problem with which the automotive industry, and especially the manufacturers of trucks, must deal, is the conclusion of every person attending the convention of service managers, which closed a three-day session at the Hotel Statler today. The convention was organized by the National Automobile Chamber of Commerce and it was the largest gathering of the kind in the history of the industry.

More than ordinary interest attaches to the convention for a number of reasons, and the first of these is that without doubt a service or service manager's department will be developed by the National Automobile Chamber of Commerce, which body will retain jurisdiction, and suggestion was made that this establish sections in different sections of the country conveniently central to different enterprises, which will operate independently, with frequent meetings, at which pertinent subjects will be considered, the general plan being much the same as that of the Society of Automotive Engineers.

Annually or oftener there will be conventions which will be open to the industry, at which policies will be determined, subject to the approval of the N. A. C. C., and committees will be appointed which will formulate suggestions for service which will eventually be submitted to the chamber and to the different members for approval or rejection.

The meeting passed a resolution that will be addressed to the N. A. C. C., which suggested that the next convention be held at Indianapolis, after Detroit and Cleveland had been proposed as places for meeting, and while no date was stated there was general understanding that this would be determined by the chamber, or at least by the directors of that body. The locations of the different sections will be largely a matter of the desire of those eligible for membership wherever they are in sufficient number to organize.

The policy of the N. A. C. C., as stated by General Manager Alfred Reeves, is to encourage the organization of service managers and the sentiment of the convention was that so far as possible service should be standardized to afford to the owners of power vehicles the largest measure of practical benefits. By this is meant that each company ought, because of its own interest, standardize its own service and for the benefit of the industry as a whole there should be recognition of a uniform or standard policy by all concerns engaged in the manufacture of power vehicles. This could best be proposed by a central body, which could obtain the ideas of the different companies, and crystalize these into what would in largest measure be most practical. With the large number of concerns operating in the industry determination of opinion with reference to a single policy could not be reached quickly, and dealing with a subject of this importance there was reason to give serious consideration from every aspect.

Report of Committee on Revision.

In this convention, however, there was nothing which will commit the N. A. C. C. At the opening a report was submitted by the committee of the chamber on standard repair parts and service policies, and this was followed with a series of papers on four principal topics, these being in sequence "General Service Policies," "Factory Service Organization," "Service Relations Between Factory and Dealers" and "Relations Between Distributors or Dealers and Customers." Generally speaking the subject of service was broadly dealt with. Regarding the proceedings of the convention as a basis for determination of policy one finds that there was one service department operating plan outlined, and that the other speakers dealt with details of department systems, all of sufficient importance to justify consideration.

Statement should be made that some of the companies have developed service departments that are the results of long experience and large investment, which function admirably, and whatever policy is determined could not consistently be in conflict with these. There is every reason, however, to demonstrate the value of such divisions and present the possibilities of a system.

Would Discontinue Free Repairs.

Without exception the speakers having occasion to deal with the subject, whether directly or in discussion, favored servicing owners to any reasonable degree and the discontinuance of making free repairs. By this is meant maintenance for a stipulated period. The convention was squarely against this, and the belief of some of the speakers was that if free repairing was discontinued there would be possibility of lessening the initial cost of vehicles, for something cannot be given for nothing, and now, wherever repairs are made gratis, those who neglect their machines do so at the expense of those who do not, a condition that is so manifestly unreasonable that it cannot continue.

The convention was thoroughly representative and was attended by service managers from all sections of the country from Boston to Los Angeles, and in all 143 were registered as attending, these representing 100 different interests. These may be summarized as 42 car manufacturers, 21 truck manufacturers, 16 car and truck manufacturers, five engine and parts makers, one

PROPOSALS PRESENTED TO SERVICE MANAGERS' CONVENTION.

Organization of a division of the National Automobile Chamber of Commerce, operating similar to the Society of Automotive Engineers, with local sections.

Next convention at Indianapolis suggested by resolution to be submitted the N. A. C. C.

Report of the Committee on Revision of Service and Repair Parts Policies of the N. A. C. C.

Suggested substitution of Square Deal Warranty for the present Standard Warranty of the N. A. C. C.

Abolition of free repairing and defining exact responsibilities of manufacturer, distributor, dealer and user.

That factories standardize servicing and adopt system that will simplify maintenance of Motor Transport Corps equipment in emergent need.

That factories undertake to train men to qualify them as a reserve for the quick development of the Motor Transport Corps for national defense or offense.

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tool maker, three dealers, four service organizations, one builder of fire apparatus, one exporting concern, the Motor Transport Corps and five trade publications.

Government Wants Industry's Cooperation.

The participation of the United States War Department as represented by the Motor Transport Corps, U. S. A., was with the object of determining the cooperation of the industry with the military establishment of the country so that a policy could be formulated and the resources of the nation accurately established. There were two primary objects, the one to learn so far as possible the manner of servicing of each company, so that the army in the event of need could obtain sufficient parts for the maintenance of its vehicles, and the other to determine to what degree it could rely upon the industry training men in their work so that they would be available should there be occasion to mobilize any considerable force.

Maj. R. A. Osmun, representing the Motor Transport Corps, cutlined the purpose of that branch of the service to maintain four large schools where men could be trained as officers, non-commissioned officers and enlisted specialists, and these men would be the nucleus of a very large department that could be quickly organized in the event of offensive or defensive operations by the army.

Industry Must Train Men for Army.

Great emphasis was placed upon the dependence that must be placed by the War Department upon the industry, for without question a considerable part of the personnel of the Motor Transport Corps in time of need must be drawn from the factory organizations, and logically whatever training of a special character shall be given in the factories must be standardized to meet military requirements.

No plan was determined, but a great deal of information was obtained which will be placed at the disposal of the War Department and with this a plan or system will be proposed that will be consistently operative with the policies of the manufacturers. However, the needs of the nation will go a long ways towards standardizing the service departments of the various factories because there must be cooperation with the government.

In the statements made by Maj. Osmun he made it clear that the cooperation of the industry was extremely important, for in large measure the efficiency of the army for national defense would depend upon the training that could be given men, and there must be a standard that would be adequate for military needs.

Report Dealt Specifically with Trucks.

The report of the committee on revision of service and repair parts policies of the National Automobile Chamber of Commerce was presented by E. T. Herbig, chairman, and as it was developed from a conference of truck manufacturers it applied specifically to trucks, but there was apparently no reason why it should not apply equally well to passenger cars. The committee formulating it was composed of the representatives of three truck manufacturers, two of truck and car manufacturers and two of car manufacturers, so that it could be regarded as equally representing the two divisions of the industry.

Statement was made that the report had not been unqualifiedly indorsed by the National Automobile Chamber of Commerce, but it was at least sufficiently meritorious as to justify submitting it to the service managers for their information and suggestion. The report suggested the abolition of the present standard warranty and the substitution of a "square deal warranty," which would guarantee the best of service so far as maintenance of vehicles is concerned, but would limit the responsibility of the manufacturers to replacement of parts found to be defective of workmanship or material within a period of 90 days from delivery, and make such adjustments as would be necessary to insure normal operating condition for 30 days after delivery, provided the vehicle had not been damaged by accident or neglected or abused. Monthly inspection at the service stations of branches or dealers would be made without charge with report of the inspectors and recommendations, but outside inspections would be charged for.

SERVICE MANAGERS' CONVENTION WAS REPRESENTATIVE.

Delegates present	143
Truck manufacturers	21
Truck and car manufacturers	16
Car manufacturers	42
Engine and parts manufacturers	5
Service companies	4
Dealers	3
Fire apparatus manufacturer	1
Tool manufacturer	1
Exporter	1
Motor Transport Corp, U. S. A.	1
Trade publications	5
Total interests represented	100

Responsibilities of Each Interest Defined.

The detail of this report is set forth on another page of this magazine. The responsibilities of the manufacturer, distributor, dealer and user are sufficiently well defined, and emphasis is made that free repairing is not to be expected and the owner is expected to care for his property as he would any other utility that might be acquired.

The proceedings of the convention were inaugurated with an address by Roy D. Chapin, vice president of the National Automobile Chamber of Commerce, who stated the object of the assembly and what was hoped to accomplish, and when he retired the sessions were presided over by General Manager Alfred Reeves of the chamber and E. T. Herbig.

The programme for the sessions was as follows:

The First Day's Sessions.

General topic, "General Service Policies;" papers on "Recommendations of National Automobile Chamber of Commerce Committee on Revision of Service and Repair Parts Policies," by E. T. Herbig, sales manager, Service Motor Truck Co., Wabash, Ind.; "Service Relations Between Accessory, Parts and Assembly Manufacturers and Vehicle Manufacturer, Dealer and Owner," by E. A. Haskins, service manager, Federal Motor Truck Co., Detroit; "Should the Factory Encourage Service by Independent Garages and Service Stations? If So, on What Basis?" by L. C. Voyles, service manager, Nordyke & Marmon Co., Indianapolis, Ind.

General topic, "Factory Service Organization;" papers on "The Functions of Direct Factory Service Representatives in the Field," by R. C. Reichel, service manager, Chalmers Motor Car Co., Detroit; "Packard Service Organization," by C. R. Lester, manager technical service department, Packard Motor Car Co., Detroit, and "The Improvement of Vehicle Design and Quality Through Service Records," by Walter M. Ladd, service manager, Pierce-Arrow Motor Car Co., Buffalo, N. Y.

The Second Day's Session.

General topic, "Service Relations Between Factory and Dealers;" papers on "What the Dealers Require from the Factory Service Department," by Ralph C. Rognon, president, Automobile Service Association, New York, N. Y.; "Plan for Regulating Distributors' Parts Stock Supply to Assure Adequate Assortment and Maximum Activity," by H. W. Drew, assistant manager, technical service department, Packard Motor Car Co., Detroit, and "Pirate Parts-Factory Control of the Source of Supply of Spare Parts and Material," by W. M. Warner, manager parts department, Cadillac Motor Car Co., Detroit.

General topic, "Relations Between Distributors or Dealers and Customers;" papers on "The Extent to Which Free Service to Customers Constitutes Good Business," by J. B. Bray, service manager, Grant Motor Car Corporation, Cleveland, O.; "What Is the Most Efficient System of Estimating Charges to Customers for Repairs?" by O. T. Hillshafer, service manager, Chandler Motor Car Co., Cleveland, O.: "The Necessity for Inaugurating an Educational Programme Emphasizing the Responsibility of Vehicle Users as Regards Care and Operation," by A. B. Cumner, service manager, Autocar Co., Ardmore, Pa.; "Service Necessities of the Motor Transport Corps," by Maj. R. A. Osmun, U. S. A.

Discussion of the Subjects.

Discussion followed each of the papers, in some instances to considerable detail, and a great deal of interest was evidenced in the subjects, explanations in response to queries leading to frank statements and frequently diametrical differences of opinion.

Besides the papers some other topics were introduced for discussion, among them being "Should Factory Service Departments Deal Directly with Owners of

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Large Fleets?" "Should Service Be Rendered Directly to Cars Owned in Territory Adjacent to the Factory?" "Should Factory Discount on Parts Cover Distributor's Profit Without Necessitating Adding Handling Charges by Distributor to Car Owner and Dealer?" and "When Should Service Be Discontinued on Obsolete Parts?"

General Manager Reeves had occasion to make numerous statements relative to the general policies of the National Automobile Chamber of Commerce, to interpretation of rulings on the excise revenue tax as applied to the automotive industry, and explained that the distribution of surplus trucks to various federal departments and to states, inaugurated by the War Department through the Department of Agriculture, which had been suspended because of differing opinions of the provisions of the bills authorizing such distribution, had been resumed, the bills being regarded as valid by the Department of Justice.

Visits to Principal Factories.

The evening of the first day the delegates to the convention enjoyed a theater party. The third day was largely given over to visits to eight of the principal factories of the city, these being divided into four groups of two each, and the visitors having the option of morning or afternoon trips, so that four factories in all could be seen by those who desired. The plants were those of the Hudson-Essex and Chalmers, the Packard and Dodge, the Federal and Michigan State School, and the Ford and Cadillac companies. The visitors were conducted through the works, special attention being given to the service departments, which were explained by the executives of the different companies, so that each individual had opportunity for learning first-handed whatever information was desired. Practically every delegate took part in the factory excursions.

Committee Favors Square Deal, Not Free Repairs

Report on Revision of Service Policies Suggests Clearer Establishment of the Responsibilities for Manufacturer, Distributor, Dealer and Owner.

WHAT was probably the most important paper of the convention of the Service Managers at Detroit was that read at the opening by E. T. Herbig, sales manager of the Service Motor Truck Co., Wabash, Ind., and chairman of the committee on standard repair parts and service policies of the National Automobile Chamber of Commerce, which committee consists of H. W. Drew (Packard), W. M. Ladd (Pierce-Arrow), A. B. Cumner (Autocar), W. M. Britton (Republic), O. T. Hillshaffer (Chandler) and W. B. Riley (Jordan).

The importance was from the fact that the committee had prepared a tentative policy that was to be submitted to the National Automobile Chamber of Commerce for approval, and was desirous of obtaining an expression from the heads of the service departments of the concerns represented. The title of the paper was "Recommendations of National Automobile Chamber of Commerce Committee on Revision of Service and Repair Parts Policies," and it was mainly a proposition to modify the well known standard warranty so that there should be practically no period when the manufacturer would be responsible for what is known as free service.

The paper was substantially as follows:

The National Automobile Chamber of Commerce committee on revision of service and repair parts policies was appointed to consider what changes for the better might be suggested in policies in existence for years. The appointment of the committee was the result of a paper read before the truck manufacturers' convention in New York in which statement was made that existing policies were quite satisfactory, there being no outstanding deficiencies. The majority of suggestions were of minor import and were impelled by the consistent growth of the industry, which justified certain distinctions being made in the text of policies, so as to more fully meet the demands, the general principles remaining unchanged.

The committee made recommendations to the chamber that were not unqualifiedly indorsed. This was due principally to the elimination of the standard warranty. The committee in its report submitted the following for consideration:

In place of the technical obligation called a warranty the committee felt that a set of principles as a working basis and a medium of understanding could well be formulated, in which would be incorporated an expression of the manufacturers, distributors, dealers and users responsibilities respectively. In this connection it should be recalled that the committee's interest has been primarily in the truck industry, the platform designed having specific reference to it.

A reading of the principles or platform will make clear the broad idea in mind and help visualize the demarcation of the lines of responsibility in which the user as well as the manufacturer and his representative shares.

1—Manufacturers: Square Deal Warranty.

Satisfactory relations between manufacturer and user is contingent upon mutual good faith. All manufacturers should guarantee to make good all their just obligations expressed and implied, which will assure each and every user the maximum of truck service at the minimum of consistent cost.

2—Distributors' and Dealers' Responsibilities.

The best maintenance results can be obtained with the user through distributors' or dealers' representing the manufacturers. The distributors' and dealers' service obligations are:

(a) To carry out the manufacturers' square deal warranty with the user.

(b) To maintain adequate facilities for making repairs, adjustments and do general overhauling in a prompt and competent manner at reasonable charges.

SALIENT FEATURES OF THE REPORT OF POLICY REVISION.

- Report submitted with recommendations that were not unqualifiedly indorsed.
- Substitution of "Square Deal Warranty" for the present standard warranty of the N. A. C. C.
- Limit manufacturers' responsibility to replacement of defective parts within 90 days from date of delivery.
- Limit distributors' and dealers' responsibilities to adjustments for 30 days after delivery.
- Provide monthly inspections without limit at branches or service stations, with charge for work done at a distance.
- Practically abolition of free repairing.
- Betterment of service to keep vehicles in operative condition.

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(c) To thoroughly instruct the user in the proper care and operation of his truck.

3—Users' Responsibility.

The greatest responsibility for satisfactory truck service rests on the user. The responsibility for proper operation and care are entirely beyond the control of the manufacturer and distributor. Upon the user, carrying out consistently and intelligently the instructions on care and operation, depends the success of truck service.

There follows then in the committee's recommendation an outline of the detail practises of the above.

Detail Practises: Manufacturers' Responsibilities—Replacement of Defective Parts.

(a) Within 90 days after the delivery of a new truck to the user the manufacturer will furnish, free of charge at the factory or branch, duplicate parts to replace any parts that are returned to the factory or branch with shipping charges prepaid, and which are determined by the company to have been defective in material or workmanship, or it will put such parts in condition as good as new.

Repair Parts Service.

(b) Discounts to independent repair shops will be subject to agreement between distributor or dealer and the repair shop.

(c) The manufacturer reserves the right to dispose, within 30 days, all parts returned, without assuming liability, unless covered by shipping instructions or adjustment is accepted.

(d) The manufacturer will refuse to consider claims for or accept for adjustment any parts not supplied by him.

Accessory Service.

(e) For service and replacements on engines, starters, batteries, magnetos, generators, carburetors, tires, rims or other trade accessories that are not made by the manufacturer of the truck; application should be made direct to the nearest service station maintained by the maker of such accessory. While not assuming any direct responsibility for articles not made by them, the manufacturer, its branches or dealers will do all that is possible to assure the user of a square deal from the makers of these parts or accessories. If, however, the accessory dealer is not adequately represented in a particular locality the dealer there is obligated to give the user proper service on such accessories.

(f) The manufacturers shall provide dealers with a list of the manufacturers of accessories used on these trucks and a list of service stations.

Distributors' and Dealers' Responsibility: Inspection and Adjustment.

(a) Truck brought to service stations maintained by factory branch or dealer will be inspected monthly without charge. The same service will be rendered at points outside of the service stations at a regular charge based on the distance. Inspection includes examination and report by the inspector of his opinion of the condition of the truck.

(b) Necessary adjustments, to put the truck in standard operating condition, will be made without charge during the first month after the delivery of a truck to a user, provided the truck has not been tampered with nor injured by accident, abuse or neglect. After the first month adjustment will be made at the regular charges of the service station. Adjustment includes only such adjustments as the inspector has, in his opinion, found necessary to put the truck in standard operating condition.

(c) Every dealer is expected to give the same inspection and adjustment service on any truck made by the manufacturer without regard to the territory in which it was bought.

Repairs, Replacements, Etc.

(d) All work not included in inspection and necessary adjustment or installation of replacements will be charged for at regular rates.

(e) When any charge work is to be done and the cost can be estimated in advance, the user, upon request, will be advised of the approximate or maximum amount of the charges before the work is begun.



E. T. Herbig, Chairman, Committee of N. A. C. C. on Revision of Service and Repair Parts Policies.

(f) When it is necessary for the convenience of the user to render service at a distance from the service station, the time spent by employees going to and from the job will be charged for at the regular rates of the station, together with all proper expenses of making the trip, cost of shipping parts, if any, and the necessary incidental expenses.

Overtime Work.

(g) Any overtime, holiday or Sunday work done upon the request of the user will be charged for at the regular overtime rates.

Instruction.

(h) On delivery of a new truck personal driving and maintenance instruction will be furnished for a reasonable period without charge. All other personal instruction will only be given in accordance with the agreement between the customer and the dealer at the time of purchase.

Repair Parts.

(i) The dealer will be required to maintain a minimum stock of both "current" and "service" parts as specified by the manufacturer.

(j) The dealer will be required to furnish an inventory of "current" and "service" parts upon request.

(k) Stocks of parts shall be designated as follows:

1—Current Parts—All parts used in trucks of models being produced by the factory.

2—Service Parts—All parts for models no longer being produced by the factory and which have not been superseded by other parts that are interchangeable with them.

3—Obsolete Parts—Parts that have been superseded by other parts that are interchangeable with them.

Return of Parts.

(l) Parts claimed defective must be returned to the factory with shipping charges prepaid within 10 days from date of replacement.

(m) Obsolete parts may be returned only by individual agreement with the manufacturer.

(n) Surplus parts may be returned only by individual agreement with the manufacturer. All parts shipped to the manufacturer by the dealer shall have transportation charges prepaid and be properly tagged.

We now come to the most important part of the triangle of responsibility—that of the user, whose responsibility has unfortunately been too little emphasized, but who will by the proper dissemination of a plain statement of facts, shoulder his burden of the responsibility and facilitate the service problems, greatly to the benefit of himself, as well as the dealer and the manufacturer.

The facts that should be driven home to him are that he is alone responsible for five commonly neglected features of motor truck operation, which are:

Lack of regular inspection.
Lack of intelligent lubrication.
Loose nuts and bolts.
Overloading.
Overspeeding.

It is impossible to over-emphasize the importance of these matters, which are beyond the control of the manufacturer, and which the user must recognize to be in the nature of an obligation on his part deserving of the most careful consideration if successful operation is to be maintained.

The manufacturer provides an efficient machine capable of successful operation for a period of years, but when the truck is installed the responsibility passes to the user as in the case of any other practical utility which cannot be of infallible construction.

The manufacturer and dealer are interested in the most efficient and economical operation of the truck, but a full measure of cooperation is necessary on the part of the user, who should avail himself of all facilities provided by the service station.

There is no reason why the user should not bear his rightful burden of responsibility, nor do we believe he will fail to do so if we show him the way.

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Accessory Service Relations From Maker to Owner

Interests Are Inter-dependent Through Distributor and Dealer, and Best Results Obtain When Parts Selling Is Regarded As a Business That Yields Fair Profits.

By E. A. Haskins, Service Manager, Federal Motor Truck Co., Detroit, Mich.

AN IMMEDIATE clarification of the subject under consideration is obtained if we change the first two words, service relations, to maintenance relations, and the much buffeted word, service, can be relieved of its mystery if given the common sense interpretation "maintenance."

I will, therefore, ask your consideration of the subject "Maintenance Relations Between Parts Manufacturer, Vehicle Manufacturer, the Distributor, Dealer and Owner." In the following discussion we may use the term dealer in a general sense, meaning the vehicle manufacturer's distributing organization.

We will also make two general subdivisions; one the furnishing of parts, and the other their installation (under which will come the general discussion of instruction).

If every seller of merchandise would only have vision enough to realize the value of proper maintenance this subject would need no discussion. Under existing conditions, however, the future sales value, good will if you please, resulting from legitimate business like effort to keep equipment in operation, has been subservient to the idea of production, immediate sales and immediate profit.

Regard Maintenance a Burden.

Some seem to have considered this maintenance problem a burden or necessary evil rather than one of the important divisions essential to the continued popularity and sale of their product.

Others have surrounded it with a veil of mystery, intimating that there is only one place to secure parts and only one way in which parts can be made to perform satisfactorily the function intended. This does not apply to parts other than those covered by the subject under consideration.

To get down to particulars, we like to think of maintenance as vital, but still incidental to the real problem, that is, sale of finished product. We are not in business to sell parts, but to keep equipment in operation. We are not vitally interested where the customer secures supplies necessary to maintain his vehicle as long as the parts are up to the standard necessary to secure best results.

Inter-Dependence of Interests.

There are two ways of visualizing the inter-dependence of all parties under discussion.

First: Consider each as a link in a chain, each one responsible to the link on either side; starting with the parts maker as the ring and through the vehicle maker, distributor, dealer to owner, we find the owner—the man who pays all our bills—dependent for satisfaction upon the parts maker. Mr. Owner does not necessarily appreciate this fact and if the dealer, distributor and vehicle manufacturer, especially the latter, is measuring up to his responsibility, or rather opportunity, the owner will never need to have this forced to his attention. Likewise, dealer, distributor and finally the vehicle maker is hampered or helped by the parts maker's maintenance facilities.

Let us not throw too much of the load upon the ring end of the chain. Let the vehicle manufacturer consider himself a wholesaler or jobber carrying a stock of suitable size to cover several months requirements and endeavor to educate the distributor and dealer to appreciate that they are the retail organization and upon them rest the opportunity of carrying a stock sufficient to care for day to day demands so that the hook end of the chain will really assist in catching additional buyers.

Second: Consider a pyramid with parts makers at the apex and the owner at the base. All our increase in business is based on owners' satisfaction. If the parts maker's product or service is not up to standard the owner will spread his feeling of dissatisfaction so thoroughly as to ultimately hinder Mr. Parts Maker's sales, and he is, or should be, vitally interested in the owner's satisfaction, even though he does not get into personal contact with the owner, as do the other interested parties.

Prices a Potent Factor.

Now for the price: Everything bears a price—even satisfactory service costs something. The question of discounts and list prices has caused much discussion. It is manifestly unfair for the parts maker to establish list prices and discounts so that the price to the owner, if passed direct by him, is much different than when handled by the vehicle manufacturer and his distributing organization. I say much different advisedly for it has never been our policy to attempt to hold to a parts maker's list if this provided a greater or less profit than considered legitimate. We have endeavored to make our service and parts division sufficiently attractive so that after the dealer has been properly started by the vehicle manufacturer he will have real financial reason for keeping it up. The real fundamental of maintenance is speed or promptness of repairs. What matters a few cents more or less compared to a vehicle tied up for several hours or days?

It would greatly simplify matters, therefore, if the parts maker would establish a discount sufficient to enable his list price to mean something only as a comparison. Let him protect the vehicle manufacturer regarding deliveries and not supply owners or dealers direct when he is not shipping the same parts to the vehicle manufacturer, who may have orders for similar parts which have remained unfilled for some period.

Make the Distributor Headquarters.

If the distributor is worthy of the name let him be the headquarters for parts and repairs in his territory. If the party nearest the owner is honestly trying to give service, justify his efforts, do no more yourself than you are legitimately asking him to do. Do not let anyone get the impression that he can get any more by going over the dealer's head.

PERTINENT POINTS IN ACCESSORY SERVICE POLICIES.

- Keeping equipment in operation has been subordinated to production, immediate sales and profits.
- Maintenance an important sales division and not a burden upon business.
- The real fundamental of maintenance is speed or promptness of repair.
- Manufacturer should protect the vehicle builder on deliveries.
- Dealer should be headquarters for parts and repairs in his territory.
- Makers of highly specialized products should establish own service stations.
- Parts makers should thoroughly instruct dealers, through vehicle builders, in maintenance.

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We have no patience or sympathy for the dealer who does not make a real honest effort to help the owner; factory help in his territory is charged to him after the first visit.

Let us all protect the party next in line on the hook end of the chain whenever he is trying his best, but it is of paramount importance to keep the owner happy, even at the sacrifice of pride or immediate profit.

If the parts manufacturer's product is of a very specialized nature, demanding more care, knowledge or experience in its maintenance than can be expected of the vehicle manufacturer's dealers force, let the part manufacturer establish his own widespread repair system and work with the dealer in caring for such work. We can see no reason why the vehicle manufacturer should receive any remuneration in any fashion from such work which has been performed without his knowledge or assistance and without material in which he has his money invested.

Keeping Ahead of Parts Design.

The parts manufacturer should appreciate the necessity of keeping the vehicle manufacturer informed in advance of proposed changes in design, so that we all may have an opportunity of preparing to care for these changes and not wait until such changes are in production.

As an ideal we, therefore, have the owner cared for by the dealer who has a reasonable stock of most active repair parts and dependent upon the distributor for replenishment of his stock and for



E. A. Haskins, Service Manager, Federal Motor Truck, Detroit, Mich.

parts seldom used, as well as expert mechanical assistance and instruction. The distributor in turn depends upon the vehicle manufacturer for his supply of parts so that his efforts can be roughly checked. Failure of any one of these should permit of the owner's request upon the parts maker receiving prompt and immediate attention in such a way as the other parties can be kept informed of their shortcomings, so that proper action can be taken to prevent repetition.

The price demanded by the parts makers from the owner should be sufficient to discourage such relations if the dealer is honestly trying to maintain the owner's equipment. We believe that the parts maker's price should be greater than the vehicle manufacturer's list so as to discourage direct dealing unless the vehicle maker or dealer is not making an honest effort in the owner's behalf.

The furnishing of parts is given the position of importance due to its being by far the most important feature of satisfactory maintenance. Parts themselves, however, are of little value unless properly installed. Therefore, every vehicle manufacturer should be able to secure suitable instruction from the parts makers so that he in turn can properly instruct the dealers' organizations by means of shop courses, schools and printed instructions.

Let us all help, not hinder. There is no such a thing as free service. Therefore, if it costs money, charge for it; if we are wrong, admit it. Give uniform treatment. Make anything worth while worth money to be appreciated and some of our problems will be simplified.

Factory Must Support Dealer Service Stations

Should Discourage Independent Shops That Flourish Upon Dissatisfied Owner Custom and Protect Their Own Organizations and Sales by Highest Grade Work.

WHETHER or not the manufacturers should stimulate the repair of machines outside of the organizations of the distributors and dealers was considered in a paper on "Should the Factory Encourage Service by Independent Garages and Service Stations? If So, on What Basis?" by L. C. Voyles, service manager for the Nordyke & Marmon Co., Indianapolis, Ind.

He assumed that the ideal of every manufacturer was to satisfy each owner, and while this was not 100 per cent. practical, the nearer this standard was approached the better. Were it possible for the owner to take his car to the factory for adjustment and repair the possibilities of affording satisfaction would be much greater, but obviously this was out of the question because of the scattered distribution, and so a general operating plan was necessary. Experience had proven that it was best to make this service a part of the duty of the dealer, and for that reason the work had been included in the contract made with him.

The dealer must have shop facilities, with sufficient space, tools and equipment and special machinery and an efficient force of trained mechanics, as well as an adequate stock of parts. The degree of attention given to this phase of the business was rarely what it should be, and it was this condition the industry was now suffering.

After a dealer has met the requirements for maintaining service and has established a shop and invested his capital, is it fair to encourage independent repair shops? He himself did not believe this policy was consistent.

Independent Shop Customers.

Two classes of owners were affected by the independent garage or repair shop, the first including those who go to them deliberately, possibly from disagreement or because of dissatisfaction, and the other includes the tourists. The latter class may be influenced by advertising or by signs displayed.

If the factory receives too large a number of complaints, the ratio being based on the number of car owners, from a certain territory relative to the service afforded, the condition should be immediately investigated, to determine the cause and bring about such change as the needs of the instance demand. This cause may be the shop personnel. The mechanics may assume to know more about mechanical construction and operation than the engineers and designers. There is a possibility that they are going too far in making changes, or it may be that the design or the construction of the machine is the cause. Perhaps it may be that it has been used in conditions not anticipated and certain changes are necessary. This may be true of new types.

Factory Should Maintain Standard Service.

Whatever the cause, the factory should make correction through the dealer rather than through the independent

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shop or garage. Not to do so is first to admit that the dealer's service is not adequate, and second that it is not possible for the factory to make its product serviceable. The surest way to keep owners from independent shops is to have our own so good that the owners shall be satisfied.

The time is not far distant when a dealer's service will determine his sales success. Even now it is a very important factor in a reorder. A good dealer is seeking to improve his service. This is a sales as well as a service problem and calls for the closest cooperation between the sales and the service departments of the factories.

The success of the independent garage shop depends largely upon the differences of the dealer and the customer, and rather than increasing these differences the factory should endeavor to reduce them by cooperating with the dealer. All of us have received letters from owners stating that a dealer could not do this, that or the other, and that it was necessary to take a car to a friend, who is an excellent mechanic, who tells him the cause and that restoration will mean a considerable expense. Very often the owner wants an opinion from the factory with reference to the proposition of the mechanic, and occasionally the factory is asked to bear a part of the cost of the restoration.

Advise Owners of Dealer's Service.

Why could not the owner be told that the repair man exists by the cars he works on and that he sells his work by telling the owner what may or may not be necessary? If an owner were to receive a letter from a factory stating that the dealer is qualified to afford him service and advise him if the work recommended is necessary or not; that the dealer is interested in the success an owner has with his car; that the dealer's men are experts with it; that he has the equipment with which to work; that the friend may not be familiar with the clearances or limits of the car; that he may not be familiar with its construction—then the owner may stop, look and listen. If the dealer cannot do what has been stated of him and his shop, then he is not a first rate dealer and it is up to the factory to see that such changes are made as will insure service.

Sometimes the repair man may be a former employee of the dealer, who has engaged in business and expected to take with him some of the dealer's customers. He may be a competent mechanic and we have no quarrel with him, but we must protect our own interests.

WHY FACTORY SHOULD ENCOURAGE DEALERS' SERVICE.

Experience has proven that this work had best be done by dealers' shops.

In event of dissatisfaction the factory should bring about a change in shop methods and personnel.

Should advise owners of practicalities of dealers' service.

Owner should inherit expense and inconvenience of work of independent repairers.

Factory should control service where conditions necessitate work in shops outside dealer territory.

All Service Through the Dealer.

There are no doubt instances where a man can make excellent arrangements with a dealer and do work to the advantage of all concerned, but such an arrangement should be worked out through the dealer, who should be responsible for the work and the plan of operating.

It is the unreliable, incompetent man, who has no interest in the owner other than the money he can get, that we must protect ourselves against. We cannot refuse to sell parts, but if no discount is allowed and the owner finds he can get parts more promptly through the dealer, he will eventually go to the dealer. Owners have the right to take cars anywhere for work upon them, but they also have the right by so doing to inherit the expense and inconvenience consequent with doing business with those who do not directly represent the factory.

The former employee may believe he can do as good work, and may have signs that convey the impression he has a dealer service station, which is not fair nor legitimate. Legal action may be taken if it can be proven that this was done with intent to deceive, but such action may lead to impressions of discrimination and aggravate conditions instead of improving them. The best protection is for the dealer to have his departments so organized and equipped and efficient that he can give the best of service.

Sometimes small shops send owners to buy parts at dealers' establishments, and such visits give the dealers chances to deal direct with the owners, which may lead to adjustment of differences and resumption of business relations.

Service in Open Territory.

All of the above has been assumed with reference to a dealer's territory. There may be cases in a territory, very large or sparcely settled, where all the cars cannot be brought to a dealer's station, in which event it is obligatory for the dealer to arrange through some local repair shop for service, but not through the factory, and the dealer should be held responsible for the service. The dealer should see that the repairer is familiar with the car and that he has the shop equipment and the mechanics that can give service. If there is doubt of this the repairer's men should devote such time as is necessary to work in the dealer's shops, or vice versa, for the purpose of instruction and qualification.

In large cities it may not be possible from either the dealer or the owner standpoint to have all of the cars brought to one point, and the dealer can take such steps as are necessary to insure service in all sections. It is up to the dealer to carry out his obligations and responsibilities.

Where an owner lives in an open territory, if there are a sufficient number of cars in use the dealer may arrange for service from a local man, but this should be on the basis of a contract and the repair man should be responsible and the factory should have jurisdiction and protect the owner and the dealer.

When changes of dealers were made, as in past years, owners may have felt that they were justified in taking cars to other places for work on them. Thus the factories have been responsible, and, being responsible, they must do their part to bring about changes.

The business is better established and the automobile dealer today is as legitimate as any merchant. Many times the quality of a car is judged by the reputation of the dealer. He must be a business man and having this qualification he must have factory support instead of what will lead to confusion and encourage the independent shop.

Function of Direct Factory Men in the Field

THE development and results obtaining from a system that had comparatively recent origination was dealt with in a paper read by R. C. Reichel, service manager for the Chalmers Motor Car Co., Detroit. He pointed out that the reduction of the cost of service was the same as reducing the price of a car and he believed that the owners of cars would buy better cars if they were confident they would be taken care of at the small service stations. If the cost of service to owners can be lessened a much larger market is automatically opened to the sales department.

One of the causes of the high cost of service is the neglect to determine every mechanical cause of failure. Every machine has its peculiarities and if it is not perfectly understood more or less unnecessary work is done and the cost is unnecessarily increased. If we can get the right kind of mechanics we can reduce the cost 50 per cent. He personally believed that a man was not qualified to do work with a minimum of labor unless he had done the work at least once,

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and the longer experience was by far preferable.

As to obtaining mechanics: Considering both outside and factory schools it was only practical to cover from one-fifth to one-half of the territory where the work was most needed. The small dealer cannot send men to schools because of the expense of educating them, and should he do so the men will go to larger places where the wages are higher and the work more standardized as to hour of labor. Mechanics always want to work on a definite hour basis. For these reasons the small dealer quickly loses his trained men. Not only this, the schools deal largely with theory and seldom with actual conditions, but if they have the work to do comparatively few men get the full benefit of the experience.

Dealers Used Road Men as Mechanics.

With reference to road mechanics, the original idea was to send men to instruct or advise the dealer's help, but these men have been used by the dealer and distributors as additional men and for this reason their work has often been useless to the factory. The men only handle one kind of trouble and go from place to place, so that the mechanics of the shops are just as helpless as ever. Road men that are mechanics only do not handle other necessary details; they do not see to keeping up the stocks of parts at minimum investment, neither do they give attention to the personnel nor appraise the value of the shop of the tools and equipment.

Some use stock auditors and service mechanics to cover all of these details, but this is a big disadvantage because the auditor only sees from his angles and the mechanic from his, but if the responsibility for the dealer having an efficient, well organized, properly conducted service department rests upon one man who is well trained, maximum results are obtained.

Field Men Control Chalmers Service.

Concerning service representatives, the plan his company has used for 18 months has been practically tested. This has been found to come nearer the answer to improvement of service than any that has been developed. The service representatives are personally responsible for the service given by the distributors from all angles. They check the distributors' stock, insist on accurate stock record, demand that the dealers summarize stock to eliminate slow moving and dead stock, keep the stock investment to minimum, check the tools and equipment, make recommendations for necessary tool equipment, check for cleanliness, light, arrangement of tools, etc.; check the personnel and make recommendations for changes, either through the department at Detroit or through the managements of the concerns. They see that all mechanical needs are handled by the distributors' mechanics. They are not permitted to get into overalls or do any work save in extreme cases. They serve as instructors and only supervise the work and the mechanics are usually qualified to meet the demands upon them. They only call on the distributors.



R. C. Reichel, Service Manager, Chalmers Motor Car Co., Detroit, Mich.

This system does not leave the small dealers in as bad a condition as before as the factory insists on the distributor having service representatives who are practically the same type of men as the factory service representatives, who handle their work in the same way. The service men call on the distributors every 30 days and check on the same points and details as the factory representatives check with the distributors, and give the dealers' mechanics the same instruction as is given by the factory service representatives.

The factory representatives take the time to see that the distributors' representatives are fully informed and where necessary will go to one or more dealers with a distributor's representatives. In this manner every place where there is a Chalmers dealer is covered, which eliminates much mechanical work. The factory and service representative is the personal contact between the factory and the distributors in all service matters. Service complaints, unusual claims and all matters of this kind are covered by the representatives with the distributors.

VALUE OF UNIFORMITY OF WORK IN DEALERS' SHOPS.

Reduction of service cost automatically increases the market for vehicles.

With the right kind of mechanics the average expense can be reduced 50 per cent.

Factory representatives to supervise service must be specially trained men qualified to do this work.

Distributors afford the same character of supervision for the small dealers.

Shop efficiency is increased and the satisfaction of the owner insured at relatively reduced expense.

Results Are Extremely Satisfactory.

Some of the results are a 60 per cent. reduction of the technical correspondence, the elimination of nearly all unjust claims, great reduction in the volume of material parts replacements on account of the service representative being able to suggest good methods of restoration without the installation of new parts, a reduction of the number of cars held awaiting parts shipments from the factory, through the service representatives being able to arrange exchange of parts between distributors on factory shortage items, the elimination of unnecessary checking of complaints at the factory caused by complaints being made from territories that are not accurate, giving the factory a quick check, and restoration on failures developing through the immediate reports of the service representatives (the reports being accurate because of the knowledge of the men), the reduction of sales resistance by having a personal check on complaints, and having at the factory clear information of the distributors' service departments, so that if a distributor feels that his service cost is running high we can talk to him on the basis of whether his cost is high because of his own service department's inefficiency, or whether the cause is the car itself.

In work of this kind the type of man is important. In developing this organization we took the pick of the former road mechanical force and have built these men up to the needs of the factory. In doing this we gave them ample time at the factory, in the service department handling claims, technical correspondence, parts orders and parts order routine, so that they were familiar with all of those divisions, and also learned the mistakes being made from the territory and in handling the distributors' business with the factory. We have found the men developed in this way are very glad to have the opportunity to broaden, and we are confident that in developing them the factory is developing men who will later control the territory sales work. From this point of view good motor car salesmen must be thoroughly informed on all angles of the business, including mechanics, service, sales, etc.

CLEAR STREETS FOR FIRE TRUCKS.

A recent proposal in Seattle, Wash., to move fire apparatus to a point further distant from the center of the city, brought out the fact that, while it is unquestionable that motor driven apparatus travels so fast that the factor of distance has been practically eliminated, at the same time it is said that the increasing use of other motor vehicles has brought about a congestion in the streets that cannot be lost sight of. Given a clear street and the motor apparatus can make quick time, but the chances for a clear street are diminishing every day. Street congestion is compensating unfavorably for the additional speed of motor driven over horse driven apparatus, and as a consequence the factor of distance from the area of maximum fire risk is still considered important.

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Service Organization from the Packard Viewpoint

Developed on Five Essential Points: Building, Tools, Personnel, Repair Parts Stock and System for Operating to Obtain Work Satisfying to Owners.

SERVICE was presented from the angle of the manufacturer by C. R. Lester, manager of the Technical Service Department of the Packard Motor Car Co, Detroit, who outlined the policy of his company and what it had undertaken to obtain so far as possible by what might be termed a uniform system or plan of operating for all its branches and dealers wherever located.

The company at its inception established two policies—the first that it would build only the best that ample resources and engineering science could produce, and the second that it would treat all of its customers alike. The Packard idea of service was two-fold, first in the quality of the vehicles it builds, and the second in affording continuous satisfaction to the owner in his use of the vehicle by intelligent service.

The engineering department designs cars and trucks with the object of obtaining convenience, serviceability and safety, the main factors being design and quality of materials, and the manufacturing department, with the best machinery obtainable and the best mechanics available constructs to the design. In manufacturing the most advanced method in practise are adopted. In the factories the complete progressive chain method for the individual parts, for assembling the different units and for assembling the chassis are the vogue.

Production Surrounded by Inspection.

Production is surrounded by a very complete system of inspection that not only applies to the detailed parts, but to the entire vehicle. One of the main reasons for the serviceability and safety of its vehicles is the very superior method used in the treatment of every piece of steel entering into their construction. He believed he was safe in stating that every piece of steel in a Packard chassis was subjected to some special heat treatment in a specially designed heat treating department which was regarded as equal to the best in this country.

After the vehicles have been completed, and before shipping, they are passed to the operating department. The function of this department is to supervise in a general way the progress of construction of each vehicle as its passes through production and to approve it before it is shipped. The determination of the department is final and when approval has been made assurance is given the buyer that the vehicle will be in standard operating condition.

Heavy Rejection of Material.

All materials, whether rough or finished, are carefully inspected, and due to the fact that nothing is passed that is not up to specifications, the rejections will range from 20 to 50 per cent. of all received, which indicates how carefully the company determines the quality of what enters into the construction of its machines. The prices for the vehicles have always been established with the basis of obtaining a reasonable profit on the cost of manufacture, taking into consideration all the protective methods to insure as nearly as possible a 100 per cent. perfect product being delivered to the buyer.

The general distribution department has never endeavored to saturate the country with Packard vehicles, allotting only what the factory could produce with reference to high grade production, and never attempting to force factory output with the almost certain reduction of quality.

When the vehicle is shipped from the factory the responsibility for its maintenance by the distributors is placed upon the technical service department at the factory, and the function of this department is that the distributors and dealers have the necessary facilities and the mechanical organization to service all vehicles.

The little booklet called "Country Wide Service" illustrates a number of the distributors' establishments and shows the effort to provide proper atmosphere, not only to sell, but to service the product.

PACKARD SERVICE BASED ON TWO MAIN PRINCIPLES.

- Quality of production insured by system of inspection.
- Maintenance directed by technical service department.
- Careful instruction given owners for attention and operation.
- Service not free, but at as low cost as is possible.
- Much depends upon organization and equipment of the service stations.
- Five essentials of service include building, tools, personnel, repair parts stock and system for operating.
- Maximum estimate plan based on completely standardized repair operations.

Technical Service Department.

The technical service department handles all service correspondence, complaints from customers, credits for shortages and return of defective material, the furnishing of all technical information, the compilation of the instruction and part books, the direction of special service representatives and road mechanics, the education and furnishing of service executives and mechanics and the improvement and supervision of the dealers' service organizations.

When the vehicle is received by the distributor it is thoroughly inspected to check up the factory, so that when delivered to the customer it is in standard operating condition. At the time of delivery an instruction book is given the driver or owner and necessary precautionary instructions are given to insure its proper operation. Instructions are also given for the use of the oiling chart, which is perhaps the most important feature for the operator of the vehicle to thoroughly appreciate and to consistently attend to. A report of such initial inspection upon arrival of the vehicle is made, and a copy sent to the factory, where it is studied so that any failure of the inspectors is noted and suggestions considered so that both the engineering and manufacturing departments can be advised and be able to improve the future product.

Service does not mean giving something for nothing. It does mean, however, giving prompt attention at as low a cost as possible. To accomplish this the distributors and branches must necessarily have well organized service divisions.

These Five Points.

There are five essential features in a well organized service station. First: Building—the building itself is much more important than has heretofore been realized. Today instead of leaving to service any vacant space remaining after other features are provided for, the service end should be and usually is designed so that the business can be run efficiently.

The Packard service department has an architectural division which works up tentative plans for distributors who may desire to build, outlining to them the proper size of such building for the cars

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in their territory, laying out in such buildings the respective locations of the stock room, service office, wash racks, toilets, etc., all with an idea of as progressive a system of following up the work as possible, so that an efficient result in the service end can be obtained.

Second—Tools—even with the properly laid out building, unless there are provided sufficient and proper tools, real service work cannot be accomplished, and with this idea in mind the department has provided its distributors with a tool equipment book, which outlines to them the tools necessary to properly carry on this important work. It is continually searching the country for new tools, which are tested and the information obtained is given to the distributors.

The Rank and File.

Third—Personnel—with the building designed properly and the tools of sufficient quantity, the next essential is the personnel. The service manager who heads this today occupies a very important position with any distributor. He is the man who sees the customer when the vehicle needs attention more often than the salesman or the manager himself, and is the man that the distributor relies on to get the repeat order, through efficient service.

A new name has been given to the order taker in the service division. He is now called a service salesman and such a man is next in importance to the service manager.

Then there is the shop foreman, who should be a Packardized mechanic, a good executive and be able to have prompt and proper repairs made as ordered.

The idea is that the vehicle should be gotten back in the hands of the customer as quickly as possible, and in the dealings with the customer extend to him courteous, intelligent and businesslike treatment.

Adequate Parts Stock.

Fourth, and next in importance of course, is the repair parts stock. You cannot repair cars without sufficient material on hand. Properly to provide for this the company has a uniform stock-



C. R. Lester, Manager Technical Department, Packard Motor Car Co., Detroit.

keeping method. It has been in use by Packard distributors for a long while. Any man of ordinary intelligence with that guide can successfully operate a stock room.

Handling stock, however, is a business. At the factory it is considered a big business. The plant is shipping out each month about $300,000 worth of service parts. If distributors will handle the stock room on the plan that has been standardized, they will accomplish the result that is wanted, that is, have the stock when it is needed and be able to deliver it properly and promptly to repair the vehicles, so that there is no waste of time.

Benefits of Maximum Estimate.

Fifth—System—every organization requires some system to handle its routine. The company has now standardized on a method of handling service repairs, called "Uniform Service Repair Method," which has not only reduced all routine to a minimum, but probably has resulted in the greatest move in the way of customers' satisfaction that the company has ever made.

The system is based on the careful consideration of the prevalent causes of owners' dissatisfaction and is designed expressly to remove these causes, and thereby produce the desired result. It has been found by actual trial that it functions exactly as intended.

Throughcut the system extreme care has been taken to provide adequate records as needed, and also to avoid absolutely all duplication of records, thus the system performs a maximum of functions with a minimum of clerical effort. The tools which are used with this system consist of 14 set forms, which is the maximum required for even the largest service stations, and in the smaller service stations it is possible to cut this down to six forms.

Working the System.

One of the most important features in producing customers' satisfaction is the maximum estimate system, based on definitely standardized repair operations. By this system the customer is told the most which he is expected to pay for any set list of repair operations, but is billed according to the actual time and material charges, unless the normal charges will be in excess of the maximum figure quoted, in which case the customer is protected. This has resulted in practically wiping out the very numerous complaints which were always being investigated, and causes the customer to pay the bill promptly, because he has been sold on the repairs and the price when the job was taken in rather than in the old way of arguing out the cost when the job was finished.

The company believes this system makes it possible to reduce the time spent on repairs, which increases the available floor space in the dealer's service station and therefore makes it possible to repair more cars in any given time.

These five essential requirements for a distributor's service station are continually being improved so that the customers whose vehicles receive attention at their hands may be satisfied.

Factory Service Regarded from Dealer's Viewpoint

By Ralph C. Rognon, President, Automobile Service Association of New York.

THE manufacturer of the passenger car and motor truck expect of the distributor and dealer that he will maintain a service department that will adjust complaints, will stock adequate parts, will maintain proper facilities and equipment for making repairs and adjustments and that all repairs, overhauling and rebuilding be done promptly, efficiently and at the least possible cost to the owner.

The manufacturers' service departments are rendering a valuable assistance to the dealers' service departments. The motives of both, one indirectly and the other directly, have the same object in view, which is the fulfillment of this obligation that the manufacturer expects the dealer to assume through his local service station.

If we are to accomplish this, a better understanding and spirit of cooperation between the manufacturers' service department and the dealers' service department is the first step.

Does the service station of the dealer receive that careful consideration it should, or is entitled to in the merchandising of motor vehicles?

Does the owner understand the real motives of a service station?

Since the inception of the automobile industry the repair shop or service station has been the bumper between the owner on the one hand and the dealer and his sales force on the other.

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Complaints, criticism of the design, construction and operation of the car are shunted to the service department. The service head must not only satisfy the customer—impossible many times—but he must execute the policies of the manufacturer and observe those of his employer. In other words, gentlemen, the buck is passed to the service head.

Service Departments Busy with Adjustments.

Instead of keeping the cars or trucks on the road, as should be the chief function of a service station, considerable time is lost and expense involved in making adjustments. By adjustments I mean credits, convincing the owner that service does not mean free replacement when he is at fault, and I might cite a number of specific cases, but you as service managers are aware of dozens of instances where the overhead is increased because of the time required to adjust the owners' mental balance.

This condition has handicapped us. We have grown into the habit of becoming an adjusting department and the owner usually assumes that such are our motives. The result is he is a frequent visitor to the service station during the guarantee period and thereafter only when absolutely necessary.

The dependability of the automobile has been proven and service men are sincere in their efforts to bring this branch of the industry to a sound commercial basis and sell efficient, mechanical replacements in a courteous and business like manner. If we are to gain this point we need assistance from every possible source in educating the owner as to the difference between adjustment and service and must convince the dealers that an adjustment department should be maintained as a separate department of service in order that our mechanical efforts may be devoted to putting the owner's car or truck back on the road. Whether the expense is carried by the owner, dealer or manufacturer, should be determined through the adjustment department.

One department cannot execute these two duties efficiently.

Does the service station meet the requirements of the owner?

The Viewpoint of the Fleet Owner.

Some time ago I had an interview with a large meat dealer in New York, who is using a fleet of several makes of trucks as an experiment in order to determine which make is the best, his motive being to standardize his delivery equipment.

His criticism of service is interesting, at least food for thought, and amounts to this: "You fellows are so busy taking in the money, adjusting complaints and making necessary repairs due to accidents or break downs that you forget I have a fleet of trucks to run and only remember me when I break down or come to your service station. The result is that I have to spend much valuable time that I could devote to my business in supervising the upkeep of my trucks. My ideas of 'service' would be:

"First—Instead of the free, careless inspections, as the most of you give, I would like an honest, thorough, systematic inspection of my trucks, that I would be only too willing to pay well for. If this work is done efficiently it will save me a great deal of time and money, if the old saying 'a stitch in time saves nine' is true.



Ralph C. Rognon, President, Automotive Service Association, New York, N. Y.

"Second—Why don't you maintain a department, with proper supervision, and systematically perform the various operations necessary for proper lubrication and adjustments at stated mileage intervals? With the proper equipment and your knowledge of your own product, you should certainly be able to handle this work, which my driver will not do, at a fair profit, and certainly, at a considerable reduction in repair bills, due to neglect of this work, to me, and at the same time really showing you are interested in your customer's welfare.

"Third—You should maintain facilities for making repairs due to accidents or break downs, and should be able to sell this work so that I would know the approximate cost and date of delivery.

"Fourth—Why don't you systematize your work so that you could rebuild my trucks at the proper mileage intervals? Under present conditions your charges are so high and your workmanship so poor that I have to run my truck as far as possible before having it rebuilt, and at this stage of the game the parts are so badly worn and the expense of rebuilding so high that I am forced to resort to the extremity of trading for a new one, and I am sure this method cannot be termed 'good business" by either your company or myself."

The Attitude of Other Owners.

I will certainly admit that this owner comes in a class by himself, as most owners either take the stand of complete ignorance without confidence, or dictate what to do without knowing what is required.

However, if we are going to commercialize service we should meet the owners requirements.

This would necessitate departmentizing our shops; namely, inspections and checking systems of upkeep under maintenance and general repairs and rebuilding under repairing.

Each department would require a different grade of mechanic and we would have to classify our craftsmen and install necessary equipment in order to produce efficiently.

Can the small dealer's service department afford the equipment necessary to rebuild cars? It would be more profitable for him to devote his energies to systematic inspections and adjustments. If this work is performed efficiently it will cut down on the volume of general repairs due to neglect of lubrication and adjustment. General repairing is clumsy and awkward to work on from a mechanical standpoint, is not profitable, and is really an unnecessary expense to the owner if his car is properly cared for.

Need of Specialists in Rebuilding.

If there were large central service stations that specialized on rebuilding, the small dealer could ship the different units to these stations, make a fair profit on overhauling and give the owner a good job instead of trying to perform this class of work, using crude methods and lack of equipment with a consequence of poor results and considerable lost time and expense to the owner.

Assuming that a way and means of overcoming these handicaps can be found; that the service stations departmentize their shops in order to meet the owners' requirements, and that service stations are located at such points throughout the country which will permit enough volume to justify proper equipment for profitable production. The next big problem is: How can we develop efficient mechanics?

If this can be done we will have a real foundation upon which to build an efficient service organization.

Efficient Mechanic Must Be Skilled.

An efficient automotive mechanic must

SERVICE DEPENDS UPON DEALERS' FACILITIES FOR WORK.

- The dealer's service station is expected to fulfill the manufacturer's obligations to the owner.
- It has been operated largely as an adjusting department rather than for vehicle maintenance at the lowest practical cost.
- Commercialized service means meeting the requirements of owners.
- This means departmentizing shops and operating to system.
- Small dealers can best confine themselves to inspections and adjustments, leaving rebuilding to specialists.
- Mechanics must be skilled for economy depends upon production.
- Development from service associations through exchange of information appears practical.

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of necessity be a highly skilled craftsman—much more so than he has been given credit for. He must first learn to be neat and clean. This will produce accuracy. Thought and study will produce skill, and these qualifications will develop speed, because of the interest he will naturally take in his work under these conditions. The average automobile mechanic, mostly through some inexcusable habit, and because of improper shop equipment, has learned to think he must like dirt.

Educational facilities in most shops have not gone very much further than teaching theory and construction of cars, whereas they must learn to develop a very high degree of mechanical skill in actually performing the different labor operations completing the job. Our skilled craftsmen should have training as machinists, must know the basic principles of electricity, must know the theory and construction of the internal combustion motor, and must also develop a very high degree of mechanical instinct and hand dexterity.

The larger percentage of mechanics working in our service stations are not skilled craftsmen. In fact, the percentage is so large that we are forced to use them and must educate the majority and recognize the minority. At the present state of affairs the finished mechanic has not means of recognition, and there is very little incentive for him to produce; on the other hand, there seems to be very little incentive for the mechanic to study.

This condition has produced a deadlock. The finished or experienced mechanic is naturally jealous of his knowledge when forced to work on the same level as the lesser skilled man, whereas he should be his understudy's best means of education. If we were to classify our mechanics by practical examination, thus recognizing the skilled mechanic and pointing out the course of study the others should pursue, we might eliminate this feeling that exists and substitute cooperation. If we gain our point we have solved our best means of education. Books and schools are necessary to teach theory and construction, which a mechanic must have in order to gain confidence, but instinct and skill, so vitally necessary to our mechanical producers, can only be developed in our shops under proper supervision and cooperation of the men between themselves.

Economy Depends on Production.

The mystery in which the repair business has been shrouded is gradually disappearing and repair work is coming to a matter of production. The equipment and methods used in repairing are quite different from manufacturing, because we have not the volume to standardize each operation, and as a general rule, we have left the mechanic to outline his own plan in completing a job. According to efficiency experts who have studied the best means of handling men, suggestion, which is really indirect reasoning, is the best method in producing results. I wonder what an automobile would cost the public were the manufacturer to allow his men to use their own plans in production, In our service station our biggest enemy to production is lost motion, which we must overcome by developing system and short-cuts in repairing, outlining the most efficient plans possible for our men to follow, instead of allowing them to outline their own.

Practical mechanical manuals outlining the best method to use in rebuilding, taking each unit as a series, with a certain number of operations under each series, together with the special tools, short-cuts and a maximum time limit on each operation a generous supply of photographs and sketches, are badly needed, and would be one of our best means of education.

Must Reduce High Overhead Cost.

Aside from this educational programme there is another subject we should discuss while on this question of mechanics. If we are to commercialize service work we must cut down on the already exorbitant overhead we are burdened with. One of the largest factors in our overhead is supervision—a rigid system of which must be maintained to overcome the inefficiency of our mechanical producers. The question involved is: After developing our craftsmen, how can we create an incentive for them to produce? For the purpose of discussions, let us put ourselves in the mechanic's shoes.

John Jones has worked for a certain company, say five years. He has developed a certain natural pride in his craftsmanship, and under usual conditions he must give up his craftsmanship and develop executive ability, in order to become financially successful. The result is he has decided to open a shop for himself. If he has any ability, were we to follow him for the first year we would find him not only contented, but prosperous. His little one-man shop, with several men under his direct supervision, is neat and clean, with all the necessary equipment and tools easily accessible. He knows that every job that leaves his shop is right, and he is really rendering efficient service to the public. His success so far has been based on reputation, and his natural ambition to grow developed him into a business man. He branches out, hires more men and moves into a larger shop. His success now is entirely up to his business ability, and his reputation made entirely with the men whom he has hired. Very seldom can a man develop these two very important qualifications, namely, a business man and a highly skilled craftsman, with the result that John Jones usually ends a sad business career.

Need of Developing Skilled Mechanics.

The point I am trying to bring out is the one-man shop idea. Can we develop it in our larger service stations? One of our biggest mistakes is lack of recognition of cur skilled craftsmen. Instead of scattering our men in one large room, with their inefficient little kits and tools locked in small drawers, and an unwritten law of each man for himself, with excuses to the foreman of "somebody swiped my wrench" or "somebody stole this bolt and that," causing delay in production, we could classify our men and put our best skilled craftsmen in stalls, with a certain number of lesser skilled men under their direct supervision. In this way we can make efficient mechanical production possible.

Our workmen can have a sufficient supply of tools and equipment easily accessible, and without danger of being lost or stolen. Some system can be used in tearing down a unit; the parts can be cleaned and placed in such a position as to facilitate efficient assembly. All missing or worn parts can be listed during the disassembling of the unit, and procured from the stock room at one time. This private atmosphere, together with financial incentive, will create a pride in a man's craftsmanship, and certainly increase production without such rigid supervision.

Development a Large Undertaking.

Gentlemen, all this detailed discussion as to the conditions that exist in our service station may not interest you, but I have endeavored to drive home the fact that if the solution of the service problem is up to the factory service department and dealers' service department, we have a big job ahead of us.

A service man has always been a sort of lonesome individual. I have often wondered how far the manufacturer of automobiles would have developed were it not for the Society of Automotive Engineers and the N. A. C. C. Cooperation is the spirit of nearly every other branch of the industry, but no organization has ever been perfected to father this branch. The trade papers have been a big help, but as a rule each service man has been plugging away for himself in a local atmosphere. He has sent out an S. O. S. without results so often that, as a rule, he has become discouraged and followed the lines of least resistance.

If some national service organization would be formed and maintain an experimental laboratory, we could dig into this problem in a national way, for service work is not competitive and what is good for one is good for another, each contributor getting the benefit of all the others' ideas. He can't lose and he has everything to gain.

A Clearing House for Educational Data.

Such a central organization could act as a clearing house for all educational data, could sponsor efficient schools for the training of mechanics, instead of letting this work get into the hands of politicians as it has in some states, and could assist the manufacturer in his production of practical manuals on rebuilding and upkeep. Such an organization could fulfill a much needed want in the collection of data on parts. Specifications of parts used by the different manufacturers and assemblers using standard units could be kept up-to-date and emergency sources of supply would be thus created.

There are many other ways in which such an organization could assist and if it could be established and operated for the benefit and through the cooperation of service men throughout the country it would form the missing link in service.

There have been several service associations formed throughout the country, our New York association being one of

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them. The results obtained through interchange of ideas and social intercourse have been wonderful, and many obstacles that come up during the day can be overcome because one service manager can call another by his first name. A great deal of good can be done by a local service association and there should be one in every community. The New York association will be glad to help in any way, such as sending a copy of our constitution, etc., and would certainly appreciate your moral support in our local work. In fact we have discussed the question as to how we could become better acquainted with the factory service department, and during show week we hope to arrange a meeting with you fellows so we can get together and chin.

There are many more problems we have to contend with and which we eventually will have to get together and discuss, but in this paper I have endeavored to show you only why we think your cooperation is of vital necessity if we are to eventually gain our point, which is to gain the confidence of the public through competency and show a fair profit for our department.

Regulating Distributors' Parts Stock Supplies

Great Waste Results from Lack of Definite Knowledge-Operating to a System Insures Against Inefficiency and Fully Protects Both Business and Patrons.

By H. W. Drew, Technical Service Engineer, Packard Motor Car Co.

THE automobile spare parts business in the country is estimated at $250,000,000 per year. The parts stocks continuously carried on hand by distributors is about $60,000,000. I believe that the effective value of this investment could be doubled by efficient methods.

Despite the magnitude and importance of the problem very little progress had been made before the war towards truly efficient stockkeeping. Glaring evidences of waste had come to the attention of the management of companies, principally when some distributor would unceremoniously present a factory with several thousand dollars worth of new parts for which he expected full credit. It was obvious that in some unexplainable manner the dealer had accumulated a mass of unnecessary stock, but beyond some abortive attempts at obtaining an analyzing dealers' stock inventories, little attempt was made to cope with the situation.

Then came the war. The government suddenly found it necessary to purchase motor vehicles in enormous quantities and realized that under the vigorous uses of war a large assortment of spare parts was necessary. But what parts and how many of each were required could only be vaguely guessed at.

Lack of Definite Knowledge.

You gentlemen are all familiar with the sad experience in connection with this business, which was due to the lack of definite knowledge of requirements. This condition was as much the result of a failure of the manufacturers to realize and cope with the situation as it was to the government's method of ordering.

The moral for us is that the distributors have been and are ordering parts today on a basis which though less obviously at fault in any particular instance, still in the aggregate results in a loss of money and productive effort which is equally far reaching. Most dealers' stocks contain variations from none of certain active parts to a 10 years' supply of others. I am speaking from my experience with three companies with whom I have been directly associated, as well as many others of whom I have knowledge.

I purpose to explain the definite steps by which manufacturers can work with their distributors in controlling stock conditions which will result in advantage to the manufacturer, distributor and owner alike.

Amount of Investment.

There has been little reticence on the part of distributors and dealers to carry an adequate assortment of parts, provided it can be done profitably, and this should always be possible if this business is handled properly. Distributors will accept eagerly any advice which will produce this result.

I will offer a method of figuring the logical stock investment which can be followed by any distributor by use of his own records only. With regard to any given case:

The first consideration is the number of vehicles in the territory.

The second is the total parts business per year, which should be easily obtained from any distributor's books.

The third, dividing the second by the first we have the important factor which shows the average business per vehicle per year. This figure will vary in any territory on account of (1) predominance of certain types, (2) the nature of the service; i. e., whether easy or hard, and (3) the number of customers who obtain parts from outside sources.

The fourth consideration is the turnover; that is, the total yearly parts business divided by the stock to be carried. If the turnover is three or more (that is 300 per cent. or more), the parts business usually is profitable. Of course the greater the turnover can be made the more profitable the business, but beyond a certain point the efficiency of the shop and satisfaction to customers will be greatly impaired. Except in certain cases my experience is that if the turnover is greater than four (400 per cent.) the results are unsatisfactory.

Factors That Determine Ordering.

The factors to be considered in determining the turnover are (1) the distance from the nearest large supplying stock, (2) the size of that stock, (3) the severity of the local service, and (4) the efficiency of the stock room and the stock supply system. You will be interested to know that at the Packard factory we have worked out a method of accurately gauging each of these factors, which

REGULATION OF REPAIR PARTS STOCK IS PRACTICAL.

- Volume of automobile repair parts business estimated at $250,000,000 annually.
- Distributors and dealers carry stocks valued at approximately $60,000,000.
- Regulating stocks to adequate assortment and insuring maximum activity a vital business problem.
- Maintenance of stock can be kept at standard by method proven by Packard system.
- Location and layout of stock room is important in affording service.
- Records and personnel are two vital factors for efficient operation.

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works beautifully, but is too complicated to explain here.

Finally, having found the annual parts business per vehicle and the desired turnover, we have simply to divide the former by the latter to arrive at the value of the stock to carry.

Let us assume that we have a distributorship with 200 vehicles. His annual parts business is $10,000. His business per vehicle is $10,000 divided by 200, or $50 per vehicle. He has decided upon a turnover of three and one-half (3½). The stock to carry per vehicle is 50 divided by 3½, or about $14.30 per vehicle. Now if he expects to market 50 vehicles this year he will have 250 to service at $14.30 per vehicle and will need $3600 of stock.

Factory Figure May Be Used.

A similar figure can be arrived at in an independent way, and used as a check on the above, by taking the factory figures in the same manner. Take the total value of factory parts shipments to all distributors and divide it by the total vehicles serviced. This gives the average parts business per vehicle per year for the entire country. Multiply this figure by a factor which is either greater or less than one for any distributor to be considered, depending on the following circumstances: (1) whether the local service is heavier or lighter than the average, (2) whether the distributor is or should be obtaining all his parts through the factory. Then the turnover may be estimated for the distributor the same as he has done.

If the total vehicles which the factory has to service number 80,000 and the total parts business per year is $3,200,000, the average per vehicle is $40. If a certain territory is somewhat more vigorous than the average the factor for that territory is taken as 1.2, which multiplied by 40 gives $48 expected business per vehicle for that territory. Dividing by the turnover of 3½ we have $13.70 stock to be carried per vehicle, or 250 times that, $3430, for the territory.

Some compromise between the stock to be carried as arrived at by these two methods will be not far from correct. This second method is also very valuable in installing new stocks in local or foreign stations just being started, or where local records are not available.

General Lay Out of Stock Room.

Having determined the quantity of stock to carry it is possible to provide for the physical facilities of the stock room. This must have intelligent consideration, if efficient and profitable results are to be obtained.

The amount of space necessary is roughly 60 by 70 square feet of area per $1000 of stock. In the large stock room this will include the office, receiving and shipping departments. In the small stock extra space must be provided for these features.

The location with respect to other branches of the business is of vital importance and should be given first consideration, even at the sacrifice of other manifest conveniences in the service station.

Foremost consideration is to have the stock room immediately accessible to the repair shop. You have all seen mechanics lined up three deep at the stock room window losing valuable time and productive effort obtaining the parts desired. One way to minimize this wasted time is by making the stock room accessible. Bringing the stock to the work is one of the big efficiency lessons which the automobile manufacturer has given to the industry, and it is up to us to apply this principle to the service station. The stock room location should also provide for sales direct to customers without interfering with the shop work and be convenient to the cashier. The sales value of an orderly stock room is now receiving considerable attention. Some dealers make it a show feature of their establishments.

Much Depends on Arrangement.

Having determined the location the general arrangement must be carefully considered. Besides the stock itself five elements enter into the problem—stock receiving, stock packing and shipping de-



H. W. Drew, Assistant Manager, Technical Service Department, Packard Motor Car Co.

livery to shop, delivery to customers and stock room office. The closer these elements can be conveniently grouped together the better result, particularly in the smaller stations. Up to a very considerable size one person can handle shop and customer deliveries. Under these circumstances it is extremely important to have the two delivery windows close together to assure prompt attention and avoid much walking. If necessary a call bell should be used. In the larger stations receiving and shipping should be in a room by themselves to avoid confusion and keep the wood, paper and excelsior from littering the stock room.

Now coming to the carrying of the stock itself. It is convenient to classify the containers used into five groups. First, the special small containers for very small parts, such as magneto and distributor parts, small special screws, etc. The small drawer type of container, about 2x3x12 inches deep, having several cross divisions, furnishes a flexible, compact, safe and clean receptacle. One cabinet will provide for several hundred of such parts.

Second, the small standard bin. This is the main reliance of the stock room. Fully 50 per cent. of the total number of parts carried can be contained in a bin 6x6x10 inches. The universal mistake in the past has been to provide too few bins of this size. It should be a bin, not a drawer, and should never have less than a 5x5 inch opening, so as to admit a hand freely. The depth should never be greater than 12 inches, 10 inches or eight inch better.

The third, I call the medium bin, about one cubic foot in size. These are on the two lower tiers of the standard small bins, for parts which, by size or quantity, call for more room.

The fourth or large bin, is usually two feet deep and high by four feet long, mostly for carrying box goods, such as inner tubes, paint supplies, stationary, etc. Very few of these are required.

The last or special types, are racks for springs, wheels, fenders, etc., all of which call for special designs which I will not take time to discuss here.

In laying out the bins, ample aisle ways, uniform movable bin sections, light and accessibility will all be carefully considered by the trained stockkeeper. Proper numbering is important. Usually attempts to make part numbers and bin numbers correspond fail on account of varying part sizes. But often associated parts may be placed together; such as valve rollers, holders, guides and pins. We have found it most convenient to have the entire bin sections carry letters—each bin now numbered from left to right, and each successive row from the bottom starting a new hundred, just as hotel or office building rooms are numbered, with all third floor rooms in the three hundreds, etc. Thus bin No. B 317 means the bin section lettered "B" the third row up from the bottom and 17 bin from the left. One stock room claims a 20 per cent. saving in time by this simple expedient.

Record Keeping and Ordering.

Keeping an accurate stock record and using it intelligently to maintain the proper stock is the root of the stockkeeping problem. Without records the stock room becomes chaos. I can take any stockkeeper who says he knows every piece in his stock room, therefore needs no records, and show him where he has the same stock in from two to five different places, and also show him parts which he is confident he does not have in stock. This by the simple expedient of the inventory.

The inventory thus becomes the starting point of the well regulated stock room. The usual methods are followed, simply listing on cards the quantity, piece number and bin number of each part, then arranging these cards by the piece number or symbol number as it is sometimes called.

We are now ready to use the perpetual inventory card, which is the simple but comprehensive basis of the entire system, as illustrated. Ninety-nine per cent. of all Packard distributors are now using this or a similar form, and the commen-

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dations received regarding it read like patent medicine advertisements. Having once used it they wouldn't be without it.

The Record of Stock Movement.

Assuming now that we have an accurate inventory of the stock on hand and a record of the activity of each part as shown in the disbursement column, we are faced with the problem of just how to use this record in maintaining our stock, bearing in mind that over-ordering ties up good money without returns, and under-ordering causes dissatisfied customers, delays and shop losses.

We have two conditions to face, first when the demand is considerable and fairly uniform, and second when the demand is erratic, or not great enough to be accurately gauged.

The first condition is readily covered by a system of maximums and minimums. The minimum or danger limit is the point when the stock is only sufficient to last until a new supply can be received. Thus if two months is required to get stock from the source of supply and a part is being consumed at the rate of six per month, a new supply must be ordered when the amount on hand gets down to 12, the minimum in this case.

The maximum is the amount to be ordered and is also based on the rate of consumptions. For small inexpensive parts listing below 50 cents or $1, we recommend ordering a 12 months supply, to avoid continuous ordering and handling, in proportion to the value of the stock involved. For medium priced parts from $1 to $5 we recommend a six months maximum and for expensive parts, above $5, a three or four months supply. This last is a safe method of conserving the investment on large parts, because they are used mostly on accident or general overhaul work where they can be ordered specially if necessary. Most such parts are usually slow moving.

System Affords Practical Results.

By the above method it will readily be seen that it should be possible to supply practically 100 per cent. of stock from the distributors' stock room on demand. This is being done by our large distributors on a large number of parts. But unfortunately, our moderate sized establishments find that a considerable proportion of their stock falls in the second class in which the demand is so erratic or so light that the card record cannot be relied upon. Up to recently the dependence in such cases was the good judgment of the stockkeeper, and in some cases this judgment has been developed and printed the "Guide for Regulating Parts Stocks." This guide simply gives the distributor the factory experience with regard to a large number of active parts in such a way that it can be applied to his own ordering problem. For example, a dealer with 100 Twin Six Packard cars in his territory has used two of a certain part costing $5 during the last three months and has exhausted his supply. Previous to that he used none in a year. Since his experience is inconclusive he refers to the guide and finds that the proper amount to order is two. He may have an exact parallel case on a different part where the guide would show four, or in another, none. If he follows the guide in each case he is sure to profit, because in the long run his experience is sure to parallel with the factory because the factory record represents the grand average experience of the entire country. After I have finished I will be glad to explain just how we arrived at these figures if desired.

The guide has served as a great aid in determining what parts are logical to return to the factory for credit. It has also been invaluable in making up lists of stock to start off a new small dealer for any given territory, especially in preparing assortments to accompany initial shipments to foreign dealers.

Please understand that this guide does not replace the good old judgment method of ordering—it simply supplements and improves it.

Personnel.

This brings to us a consideration of the human element in the stockkeeping problem. No system, however well devised and worked can be entirely automatic and there are so many phases of this business that the good judgment of an intelligent manager must be available if satisfactory results are to be obtained. In no branch of our business is such great financial responsibility imposed upon such low grade men. It is no uncommon experience to see a $100,000 parts business completely in the hands of a $100 man. Such men almost invariably lose to the company many times their salary in injudicious ordering alone.

To operate successfully any fair sized stock room, the stock manager must have a wide range of intellectual and personal equipment. On the human side he must be scrupulously honest, for temptations are great and the results of loose morals disastrous. He must be loyal to the company and cooperate with other departments. He must be courteous to customers and diligent in meeting their requirements. He must be enough of an executive to command the respect of assistants and to delegate detail work to them.

On the mental side he must first of all have a good knowledge of automobile mechanics and be fully aware of the use and mechanical characteristics of the parts. He must act as a safety valve for the shipments and prevent them from "going crazy" as the saying goes, with regard to the necessity of changing large numbers of certain parts. The parts guide is a valuable aid in this direction.

Contrary to general opinion he need not have an excellent memory. On the other hand it may be a handicap in postponing the inevitable but desirable time when stock will be found entirely by the card record.

He must have an appreciation of the value of needed records and must use them; at the same time he must recognize and avoid the pitfalls of red tape.

He must know some accounting. The progressive stockkeeper knows how to use the data on the amount of stock to be carried as outlined in the beginning of this paper.

He must have a keen appreciation of the value of money and a real desire to conserve it. He will know that parts are so much dollars and cents and will no more kick around a piston pin bushing than he would a 50 cent piece—its exact equivalent. He will order parts by the cheapest route whenever possible and avoid telegrams by anticipating stock requirements.

There are, of course, not many such paragons available; none at all you will agree, who can be permanently employed at a pittance these days. The lesson for us it seems to me is first to convince distributors that a good salary for the right man in such a position is a good investment. Then we must train young men who are available for such work. At the Packard plant we are developing a stockkeepers' school which we believe will bring good returns in better stockkeeping, and we have specialists continually advising and assisting dealers in improving their stock efficiency.

I might go on and explain how the factory is cooperating in its end by supplying the most convenient possible parts lists, price lists, order blanks, etc., but I believe I have taken enough time to bring out my point that the factory can and should help the dealer, that the dealer will benefit immensely, that this is accomplished by better stock room facilities, better stock records, better ordering and better personnel, and that the net result of all will be more profit and better business to factory and dealer alike, better customer satisfaction and a greatly enhanced reputation of the product.

ORDNANCE DESIGNING OFFICES.

The ordnance department of the United States army has established designing offices at Syracuse, N. Y.; Cleveland, O.; Detroit, Mich., and Peoria, Ill., to bring about closer relations between the war department and to automotive engineers, whose cooperation in work related to this department was recently requested and acceded. A permanent exhibition of ordnance material is to be maintained at the Aberdeen proving ground, where automotive engineers may inspect samples of motorized apparatus used by the ordnance department at the present time.

Specification work is now being conducted in connection with the further production of tractors, trailers, tractor caissons and some special apparatus. Various matters in connection with the design of tanks are also under consideration.

WHITE INCREASES CAPITAL.

A special meeting of the stockholders of the White Motor Co., Cleveland, O., has been called for Dec. 12 to approve an increase in capital stock from $20,000,000 to $25,000,000. If approved, the $5,000,000 new stock will be offered to shareholders at par, $50, in the ratio of one share for each four shares of old.

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Is Free Service to Customers Good Business

Labor Cost, the Principal Item, Usually Is Borne by Dealers—Delivery of Vehicles in Standard Condition Only Certain Insurance of All Interests.

"THE Extent to Which Free Service to Customers Constitutes Good Business," was the subject of a paper presented by J. B. Bray, service manager for the Grant Motor Car Corporation, Cleveland, O., in which he pointed out that the subject was of material importance to manufacturer, distributor, dealer and owners. While five to 10 years ago the purchaser of a car or truck was probably entitled to considerable free service because the vehicles produced then were far from perfect, but with the better design and construction of cars and trucks today free service, as it is now understood, is not necessary and it is not good business. Free service as generally understood is work done gratis on cars and trucks during the initial use and is generally made necessary by one or more of these causes: Faulty design and defective material or workmanship, including inspection on the part of the manufacturer; failure of the distributor or dealer to tune and inspect the vehicle before making delivery, and the fact that the majority of retail salesmen lead their customers to believe that the machines will be "taken care of" for 30, 60 or 90 days after delivery as the case may be.

The results from faulty design, which cannot be obviated in the best manufacturing families, is one of the most difficult conditions for a factory service organization to deal with. Usually letters of complaint or criticism of mechanical or other conditions are referred to the service departments and for this reason the service manager is probably better informed as to the defects of the product than any other departmental head. When responsible dealers call attention to any condition the service manager knows from experience obtains, he must meet the situation and make an adjustment or replace the parts so that the machine will afford satisfactory service at minimum expense to all concerned.

Who Shall Pay the Labor Expense?

The charges for the parts can readily be settled as coming under the standard warranty relating to defective material, but there is the question of whom shall assume the labor expense. Perhaps the condition may develop after a few days use or during the period when the machine was driven from the factory to the owner or dealer. If the result is the first specified the owner expects that the car will be made mechanically operative without charge to him, which places the burden of the labor expense on the dealer. In the second instance, the dealer or distributor will repair the vehicle and make statement to the factory, which in most cases again places the expense on the dealer.

At one time the factories would send mechanics to large distributing centers to make replacements of parts necessitated by faulty design, but this is hardly practicable with the large production of today. He was firmly opposed to a policy that would bind the dealer to make outside labor allowances, but believed that there was need of a policy that would be fair to the dealer and afford him an actual basis for settlement. While exceptions could be made to rules, this was one that required careful consideration, for when labor claims had been allowed to a dealer by a factory there would be a precedent that would seemingly justify the dealer expecting the same policy to continue in future cases.

Though it was practicable to send mechanics to serve owners, and some manufacturers operate with territorial mechanics, only in rare instance is it profitable to have these men actually do repair work on cars or trucks.

Need for a Distinction of Claims.

Once a distinction was made between material that is defective and that which does not endure because of faulty design, such claims are not of such numbers that they cannot be dealt with satisfactorily. He believed that dealers could well afford to install without labor charges replacement parts supplied gratis by the factory. However, he was of the opinion that the proviso of 90 days as specified in the standard warranty, should be changed as regards labor only. He believed that a driving distance of 500 miles should be substituted for the period of 90 days, and that good judgment would justify charges for labor on cars and trucks after the vehicles had been driven 500 miles. The reason for this was that it was not uncommon for a car to be driven from 400 to 500 miles in 90 days and the average city mileage in the spring and summer was probably above 3000 miles during the first three months of use, while a farmer or a buyer living in a rural community seldom drives more than 5000 miles in a season.

He maintained that it would be judicious for the dealer to pay the labor charges connected with the replacement of defective parts for a limited period and that the duration of this period should be thoroughly understood by the purchasers. He believed that any defect of workmanship that, broadly speaking, was not observed at the factory in the test and final inspection, should be detected by the dealer before delivery to the customer.

Dealer Should Check All Vehicles.

Regarding the failure of the dealer or distributor to carefully check and test the vehicle before delivery, he assumed that this checking and testing should be done just as systematically and thoroughly as at the factory and there should be a printed list that should be followed. An hour's labor at this time would save hours of time later and, of course, the inconvenience and loss of service to the owner and the loss of prestige and business repute of the dealer. There is special reason for condemnation of the practise of delivering vehicles with the statement that they will improve as they are used, even when they are known to need adjustment.

The fact that a majority of the retail salesmen lead customers to believe that they are to have free labor on their cars and trucks for indefinite periods of time he believed was the greatest single cause of the free service problem. There was

FREE SERVICE UNNECESSARY AND NOT GOOD BUSINESS.

- Charges for repair parts can be readily determined.
- Payment for the labor involved in adjustments the important factor.
- Owner's demand in any instance places the burden on the dealer.
- Need of a policy that would protect the dealer.
- Distinction of claims would be a practical foundation.
- One safeguard would be dealer checking condition of vehicle before delivery.
- Full responsibility of owners' save for defective material, a prospect, that could be brought about by educational campaign.

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no reasonable excuse for such representation and he maintained that this was a condition that would be the most difficult to deal with. He believed that the present policy was wrong in that it stated that the companies would through their dealers, make inspections and adjustments for 30 days without charge. This was from the fact that it was a period of time that was not an equitable proposition, and in his opinion making free adjustments for 30 days on any piece of mechanism as complicated and subject to as much abuse as a car or truck was not good practise.

His conclusion was that in the near future dealers would have to assume the position that all cars and trucks were well adjusted and in first class condition when delivered by them, and that any adjustments or repairs later becoming necessary would be made at the expense of the owners, with the single exception of defective material that is developed in the first 500 miles of use, and which shall be replaced by the factory without charge. While this might appear arbitrary it was in reality the attitude assumed by the manufacturers.

He maintained that this was fair and business like provided that it was clearly understood by all owners and was so specified in the service policies. He did not believe that the sales of any responsible concern would suffer from a clean-cut statement of this kind. The result of the abolition of free adjustments and inspection would be an increased amount of labor on the car or truck by the owner or driver and a consequent increase in their interest and satisfaction.

While the satisfied owner is the best advertisement that a truck or car manufacturer can have, if this satisfaction was to be obtained at the expense of giving something for nothing the start was bad. His experience was that the more free work was done for the average owner the more was expected, and there was loss of respect for the dealer and the product.

Free Service Not Necessary.

His conclusion was that free service was not necessary and could be dispensed with through an educational campaign, which would include first the manufacturers further perfecting their designs before making sales; to subject vehicles to more thorough and longer tests under normal and not special conditions, and to develop their inspection forces to the strongest point possible; second, for distributors and dealers to see that full attention was given new cars and trucks received from factories and to see that owners were thoroughly instructed in their care and operation, and third, for the distributors and dealers to make clear to their retail salesmen that they were selling cars and trucks and not free service, and to make clear to their customers that there was no free service.

He believed that it would be possible for salesmen to take the position that the cars and trucks they sold had been thoroughly tested and adjusted and that they were ready for continuous service, and that the successful operation of the machines depended entirely upon the care and attention they received. With the discontinuance of free service the need for more capable and reliable paid service would be more keenly realized than ever before, which was one of the greatest needs of the industry today. In his opinion the average buyer would prefer to pay cash for reliable, competent labor rather than have incompetent labor gratis. And in connection with qualified paid labor would be the need of flat figures for repairing of all kinds. It would appear that manufacturing cars and trucks principally for business purposes and selling them largely to business men would bring home to the users the fact that they were willing to pay for what they get, and while they do not want something for nothing, they want the value of the money they have paid.

What System Will Best Estimate Repair Charges

By G. T. Hillshafer, Service Manager, Chandler Motor Car Co.

IT IS the writer's firm opinion that an efficient system of estimating the charges to a customer for repairs should be adopted by every automobile dealer.

It is surprising to know that some of the large dealers really do not have what might be classed an efficient system for handling the repairs that be required on a customer's car. They have adopted what might be termed a more or less "hit or miss" method, and sometimes do not even give the customer the slightest idea beforehand of what the charges might amount to, but simply advise him that when the repairs are completed a bill will be presented for whatever the cost amounts to, based on the actual time and material involved.

Invariably the amount of the bill is greater than anticipated. Of course the customer (probably after a considerable amount of protesting) finally makes settlement, but not without getting the impression that he has not been given a fair deal, with the result that when future repairs are required the car is taken elsewhere.

This is not the only harm resulting, however, since it will also serve to evince other owners that there is something wrong, reflecting not only on the service as rendered, but in some cases affecting future sales as well.

Value of Estimating the Cost of Work.

It will readily be seen therefore that it is very important for the dealer to furnish an owner with such an estimate beforehand. Then if any questions arise they may be settled before the repairs are started and the customer will know about what the extent of his bill will be. In this way the dealer will not only gain the customer's good will, but all his future business as well.

Estimating repairs is not the work of a novice, but demands the attention of some one who is familiar with the particular car or cars the dealer is handling. He must be very familiar with the different parts that are apt to wear in the course of time as well as any difficulty which might arise, and be not only able to diagnose same promptly, but give the customer an estimate that is not only reasonable, but correct, so that when the bill is presented the actual amount will not vary with that of the estimate by more than a few dollars either way.

Most any dealer has some one in his organization who could be trained along these lines so that when a customer brings his car to the service station it may be thoroughly tested and an accurate estimate submitted without delay.

What Can Be Considered an Efficient System.

To begin with, a thorough study should be made of all the parts in the car and lists made up of those generally used when making any particular repair. Next a time study should be made to determine just what length of time will be consumed in making that particular repair. Then a list or chart should be made up itemizing the parts used and the amount of labor required. This list

ESTIMATING REPAIR CHARGES A POTENT SERVICE FACTOR.

- Efficient system of determining repair expense before work is begun is necessary to satisfy owners.
- Controversy over charges results in dissatisfaction and drives work from the dealer.
- Labor charges could be determined by time study of operations and the results averaged.
- Parts cost not a matter of doubt.
- Owner should pass on estimate before work is begun and approve or reject it.
- Work authorized by owners cannot be questioned if the estimate is made by a competent man.

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should be kept on file and revised from time to time to conform with the material and labor fluctuations.

A card of sufficient size should then be made showing the different assemblies such as the motor, transmission, rear axle, etc., with space enough opposite each item to note its condition. The tester should be supplied with this card and he in turn should check the items which are in need of repair and make a notation of their exact condition.

The estimate may then be made up with the aid of the list or chart already prepared. The parts required should be itemized and the labor should be shown in one amount. For instance, if the motor required 75 hours labor, the rear axle 30 hours and the transmission 20 hours, the total should be listed as 125 hours at so much per hour. The advantage of showing the labor as one item is that one assembly might not require as much labor as estimated, while another might require more, and it may therefore be equalized so that the final result will be almost the same as originally specified. Then, too, a liberal margin should be added to the labor to cover any such small repairs that might be noticed otherwise and not shown on the original estimate.

Owner Should Pass on Estimate.

After the estimate is made up it should be presented to the customer and anything that is not entirely clear should be explained; all questions should be settled before the repairs are started so that the customer will know just about what to expect in the way of charges and the dealer know that nothing is going to be done without the customer's knowledge and approval.

A copy of the estimate should then be submitted to the customer, preferably in letter form, giving an approximate delivery date. No matter how small the repair, an estimate should always be submitted so that should any future question be brought up the dealer will have a record at hand which can be consulted to learn just what work was performed.

If during the process of repair it is discovered that something additional is required, the customer should be apprised of the fact and nothing done until an additional estimate has been submitted and approved of. This is very important and should be watched carefully.

Other Estimates Not Satisfactory.

This system as outlined has been adopted by some few dealers, but in the majority of cases, if an estimate is submitted at all, a somewhat different method is followed. The one most commonly used is as follows:

Repairs to motor, so much—rear axle, so much—transmission, so much—etc., itemizing the labor and parts all in one amount, which to the writer seems like sort of a "hit or miss" proposition and has some very great disadvantages.

Sometimes it happens that the customer is mechanically inclined and knows his car quite well, and it is then that he wishes to know beforehand just what is going to be required to make the necessary repairs. Therefore, if the parts are itemized separately it will enable the customer to appreciate very readily just what will be required.

Too much cannot be said regarding the manner in which to handle customers. The person making up the estimate should be a diplomat as well as have the ability to diagnose any difficulty that might arise, and this, in addition to the repairs being handled efficiently will not only serve to satisfy the customer, but create a good impression among his friends and acquaintances who might happen to own similar cars, ultimately resulting in advantage to the dealer.

The writer need not dwell upon that particular point too long, however, since it is generally known among dealers that the good will of a customer is the most valuable asset that can be had.

Considerably more could be added to this paper and details gone into further, but as the time is limited and as there are undoubtedly others who wish to express their views the writer would be very pleased to receive suggestions or criticisms.

Need of Educating Owners to Vehicle Operation

Campaign Should Start with Salesmen and Continue Through Service Department, with Inspection Reports That Should Have a Definite Value in Equipment Maintenance.

By A. B. Cumner, Service Manager, Autocar Co., Ardmore, Pa.

ONE of the serious service problems of the truck distributor is properly to impress upon the user a sense of responsibility for the care and operation of his vehicle. This education should continue to a point where the owner will fully realize that he assumes an obligation to maintain the car continuously in an efficient condition, both for the sake of his pocket book and for the transportation he expects from the investment.

The campaign must be educational and not mandatory. By this I mean that good and sufficient reasons must be given a customer so that he will fully appreciate that any trouble he may go to in the proper handling of his car is entirely for his own benefit. The simple telling once, either orally or in printed form, is not sufficient and continuous faults must be the constant work of the service department. The actual control of the user's car is entirely in the user's hands, and completely beyond the jurisdiction of the distributor. This fact must be kept in mind in any plan laid out for the owner's education.

Repeat orders represent about 50 per cent. of our business today. But repeat orders are based on satisfaction furnished, and satisfaction can be given only when motor truck transportation has proven economical in a big sense. Economy then, must be fostered, and this can be done only through spreading the gospel of intelligent care and handling.

The manufacturer delivers an efficient machine, capable of successful operation for a number of years. But when the truck is installed, responsibility passes to the user, as in the case of any other practical utility. In selling a car we sell with it a maintenance expense account, but the determination of the amount of this account is almost entirely in the hands of the user. The better he is educated in the proper operation and maintenance methods the less the expense account will be.

Five Factors Cause Expense.

Service department experience has developed that there are five commonly neglected features of truck operation which are responsible for the majority of current repair expenses. These are lack of regular inspection, lack of intelligent lubrication, loose nuts and bolts, overloading and overspeeding. Through personal experience covering innumerable instances, I have definitely proven to my own satisfaction that the average current repair bill can be reduced at least 50 per cent. providing the owner gives a reasonable amount of attention to these five commonly neglected points.

There are many channels through which educational work can function, but this work may be divided into two

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classes, the printed or advertising part, and the oral or personal part.

That which is printed and which applies to a certain vehicle should, of course, emanate from and be distributed by the maker or distributor of that vehicle. It should in all cases be written down to the level of the driver's intelligence, somewhat on the order of a child's primer, rather than be kept up to the standard of engineering technique. Simplicity should be the key note of all maintenance instruction propaganda with the drivers.

Touching the question of lubrication instructions, it has been found that the use of definite colors in lubrication charts greatly simplifies them, and makes them easier to follow. It might be within the province of this chamber, through the proper committee, to suggest a standard set of colors for lubrication charts, where one color would indicate "daily attention," another "weekly," a third "monthly" and so on, so that all can be on the same basis.

Field Work for the Industry.

From the advertising standpoint in the educational program, any publicity that would emphasize the owner's responsibility is advantageous, and here again I think is a decided field for work by the chamber, in that they could widely spread fundamental maintenance truths that would apply equally to all motor trucks, and would come to the owner backed by the prestige of the chamber. It is probably true that it would be inadvisable for any manufacturer to lay undue emphasis on the care of his truck in publicity, as it might result in raising doubts as to the quality of his product. A much better vehicle for a national campaign would be the N. A. C. C. Activity from this source would not reflect on any particular product and a broad policy could be pursued which would surely result in much good to the industry as a whole.

We now come to what I consider the most valuable feature of the entire educational work, and that is the personal and individual contact with each owner. This continues throughout the entire time the owner has the vehicle in service. It should start with the first visit of the salesman, and commencing at that time he should sell to the customer a sense of responsibility of the obligation that is assumed. Salesmen should realize that they are not simply order takers, but that they have a mission in the education of a customer from a service standpoint. Sales make service and service makes sales. It is for the selfish interest of the salesmen that his customer obtains the maximum of service from the vehicle delivered.

Education Must Start with Salesmen.

The salesman's personal acquaintance with owners makes him the logical man to start the educational campaign and his words will have more weight than a great deal of printed matter. His mission should be primarily to place responsibility upon the owner, and then if his instructions cannot be definite or technical, to put the owner in contact with the service department, where his education can be carried further.

The delivery of a car to a new owner should be the occasion of serving notice upon him that repair bills are in his hands entirely, that he can make them large, or can almost eliminate them. And in this connection an excellent method of bringing home to the owner his responsibility for his bills, is to write on the face of every invoice covering repair work, the particular cause, be it carelessness or neglect, of the trouble which made the repairs necessary.

The policy of offering free service is one to be carefully guarded against for the reason that it is so often misinterpreted for free repairs. The amount of free repairs a customer should receive ought to be confined to those repairs which he is entitled to under a liberal interpretation of the policy that he should and shall receive a square deal at the hands of the seller.

OWNER'S SENSE OF RESPONSIBILITY MUST BE ESTABLISHED.

Education the only practical means to bring this about.

Care and maintenance of vehicles is entirely beyond the control of the distributor and dealer.

Repeat orders, the result of satisfaction, is becoming more and more a large part of the sales of a manufacturer, a distributor or dealer.

The better the care the lower the upkeep of a vehicle.

Campaign had best be carried on by an organization not the manufacturer.

Education must start with salesmen.

Systematic inspection is indispensable.

Owner Must Know Service Policy.

The owner should be told precisely what the service policy of the company is and nothing should be left to his imagination. If the salesman sells the service policy with the vehicle, very little misunderstanding can ever arise between the purchaser and the company. It is human nature to find fault with the man who sells the goods when such goods are not rendering satisfactory service. It is, therefore, entirely logical that customer's kicks are made to the salesman. If the salesman has received his maintenance education he should be able in a large number of cases to point out the remedy to the customer without recourse to the service department. I think the general custom has been that the service department has had too little to do with the customer until after delivery. I believe that during the time between the close of the sale and delivery of the car, the service department might do some excellent primary work with the customer, and generally assist in making the proper preparation for the operation of the car to come.

Part of the customer's education can very well function through what we have found very valuable, drivers' or owners' maintenance talks given at regular intervals at branch points where the drivers and owners are invited to the service station, and the vehicle is taken up section by section, and carefully explained as to the whys and wherefores and the element of proper care and attention; also going further into the damage and expense that will result if neglected. It is really interesting to note the line of questions propounded by the drivers and the general interest shown. Experts on such things as carburetors and magnetos can be introduced, these specialists volunteering from the makers of these articles.

System Must Have Inspection.

A system of monthly inspections should be maintained. They are more than a determination of the condition of a car. They should be the means of informing the owner of the manner in which his equipment is being maintained. To this end reports of inspections should be mailed owners, and if the same trouble is noted on the successive reports, it should have attention called to it. The monthly inspection, however, serves a larger purpose than merely to advise of a car's condition. It brings the question of the truck's welfare to the attention of the owner at regular intervals, and if consistently adhered to, insures that he will give due consideration to this all important feature. Owners should be advised to give as much attention to the condition of their equipment as they do to maintaining their plant, stocks and etc. in A-1 shape.

The responsibility of an owner for the proper operation of motor trucks is a larger question than simply keeping them in good repair. It may be necessary for him to speed up other elements of business to meet the more rapid conditions obtained by the use of motor trucks. This problem is for the salesmen to handle and it should be satisfactorily worked out to make the use of trucks economical.

SERVICE CONVENTION DELEGATES

Concern	Address	Representative
Automotive Service Association	New York, N. Y.	Ralph C. Rognon
Auto Electric Service Corp	Detroit, Mich.	D. W. Burke
Automobile Journal Publishing Co	Pawtucket, R. I.	William W. Scott
Autocar Co.	Ardmore, Pa.	H. W. Coals
		A. B. Cumner
		F. C. Hubl
Autocar Sales & Service Co.	Bosto... Mass.	C. R. Borton
		H. E. Ferris
		C. L. Wie...h
Atterbury Motor Car Co.	Buffalo, N. Y.	R. B. Pedric
Allen Motor Car Co.	Columbus, O.	R. B. Perry
Anderson Motor Co.	Rock Hill, N. C.	L. W. Brock
American-LaFrance Fire Engine Co.	Elmira, N. Y.	F. E. Walker
Apperson Bros. Automobile Co.	Kokomo, Ind.	G. W. C. Braithv...

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Concern	Address	Representative
Acme Motor Truck Co.	Cadillac, Mich.	A. B. Westman
Auburn Automobile Co.	Auburn, Ind.	W. H. Denison
Bearings Service Co.	Detroit, Mich.	D. H. Torrey
Buick Motor Co.	Atlanta, Ga.	E. G. Uborne
Briscoe Motor Corp.	Jackson, Mich.	J. L. Blyth
Baker-R. & L. Co.	Cleveland, O.	C. H. Warren
Barley Motor Car Co.	Kalamazoo, Mich.	C. W. Warner
Class Journal Co.	New York, N. Y.	J. E. Schipper
		R. W. Burlingame
		J. Howard Pile
		H. C. Skinner
Chilton Co.	Philadelphia, Pa.	D. S. Hatch
		T. F. Cullen
		George H. Duck
		C. P. Shattuck
		A. G. Metz
		J. C. Weed
Continental Motors Corp.	Detroit, Mich.	J. G. Painter
Commerce Motor Car Co.	Detroit, Mich.	D. F. Holmes
J. I. Case Threshing Machine Co.	Racine, Wis.	G. B. Gunlogson
Cleveland Automobile Co.	Cleveland, O.	J. T. Nicholson
Cadillac Motor Car Co.	Detroit, Mich.	W. M. Warner
Crow-Elkhart Motor Corp.	Elkhart, Ind.	D. C. Norris
Clyde Cars Co.	Clyde, O.	H. M. Humphrey
Columbia Motors Co.	Detroit, Mich.	George C. Gurney
Chandler Motor Car Co.	Cleveland, O.	G. T. Hillshafer
Chalmers Motor Co.	Detroit, Mich.	R. C. Reichel
		W. A. Hillman
Detroit Electric Car Co.	Detroit, Mich.	A. C. Downing
		George L. Bixby
Diamond T Motor Truck Co.	Chicago, Ill.	J. J. Boland
Dorris Motor Car Co.	St. Louis, Mo.	R. M. Whitney
Daniels Motor Car Co.	Reading, Pa.	G. M. Delker
Dort Motor Car Co.	Flint, Mich.	C. M. Sincell
		J. R. VanCleve
		R. H. Soule
Elgin Motor Car Corp.	Chicago, Ill.	N. A. Hendrickson
		A. H. Sackett
Federal Motor Truck Co.	Detroit, Mich.	E. A. Haskins
		George H. Dow
		Paul Williams
Franklin Automobile Co.	Detroit, Mich.	O. E. Harmon
Fuller & Sons Manufacturing Co.	Kalamazoo, Mich.	E. L. Harkness
General Motors Export Co.	New York, N. Y.	G. A. Whitcomb
General Motors Corp.	Detroit, Mich.	J. B. Bray
Grant Motor Car Corp.	Cleveland, O.	E. F. Wackwiz
Gray & Davis, Inc.	Detroit, Mich.	W. H. Cleveland
		M. A. McCullough
Garford Motor Truck Co.	Lima, O.	C. E. Salisbury
Hupp Motor Car Co.	Detroit, Mich.	D. E. Purdy
		H. R. Perry
Haynes Automobile Co.	Kokomo, Ind.	H. W. Gilmore
Holmes Automobile Co.	Canton, O.	C. M. Brede
Hinckley Motors Corp.	Detroit, Mich.	G. R. Weldele
Insurance Field Co.	Chicago, Ill.	O. H. Braewiery
International Harvester Corp.	Akron, O.	F. A. Frisk
		O. Steiger
Jones Motor Car Co.	Wichita, Kan.	O. H. Ressegiue
		N. B. Burkness
Kleiber & Co.	San Francisco, Cal.	T. B. Bigger
Kline Car Corp.	Richmond, Va.	C. E. Havens
King Motor Car Co.	Detroit, Mich.	G. G. Jackson
Lincoln Motors Co.	Detroit, Mich.	J. H. Normington
		W. T. Emmons
Locomobile Co. of America	Bridgeport, Conn.	G. E. Pope
		W. S. Teel, Jr.
		Albert Gough
Liberty Motor Car Co.	Detroit Mich.	C. H. Beaumont
Lexington Motor Co.	Connorsville, Ind.	J. E. Burns
Maxwell Motor Sales Co.	New Castle, Ind.	W. R. Forker
Moreland Truck Co.	Los Angeles, Cal.	A. H. Rederer
Moon Motor Car Co.	St. Louis, Mo.	D. E. Roche
Mitchell Motors Co.	Racine, Wis.	E. H. Snavely
Moline Plow-Stephens	Moline, Ill.	M. B. Davey
Milburn Wagon Co. Works	Toledo, O.	A. E. Richmond
Maxwell Motor Co.	Detroit, Mich.	H. G. Moock
National Automobile Dealers Association	St. Louis, Mo.	L. V. Voyles
Nordyke & Marmon Co.	Indianapolis, Ind.	S. H. Keene
National Motor Car & Vehicle Corp.	Indianapolis, Ind.	W. Von Zimmerman
Olds Motor Works	Lansing, Mich.	C. J. Nephler
Oakland Motor Car Co	Pontiac, Mich.	R. A. Armstrong
		J. W. Hendley
Oneida Motor Truck Co.	Green Bay, Wis.	C. R. Lester
Packard Motor Car Co.	Detroit, Mich.	H. W. Drew
		F. C. B. Bank
		F. W. Henning
Paige-Detroit Motor Car Co.	Detroit, Mich.	William DeGalen
		F. W. Boman
Pierce-Arrow Motor Car Co.	Buffalo, N. Y.	W. M. Ladd
		C. D. Cowles
Premier Motor Corp.	Indianapolis, Ind.	G. J. Miller
Pilot Motor Car Co.	Richmond, Ind.	J. W. Connor
Peerless Motor Car Co.	Cleveland, O.	E. D. Pugh
Republic Motor Truck Co.		George Ogden
Reo Motor Car Co.	Alma, Mich.	L. E. Finch
Root & Davenport	Lansing, Mich.	D. S. Smith
Studebaker Corp.	Moline, Ill	George W. Sweet
	Detroit, Mich.	Don O. Wilson
		George W. Crest

A VETERAN PIERCE-ARROW.

Longevity is an attribute of the motor truck which counts for economy. This is strikingly illustrated by the record of a Pierce-Arrow machine used in the mountainous region near Lee, Mass., which has run over 200,000 miles in actual service.

The truck was put into service in 1911 by the Mountain Mill Paper Co. Many months of the year it was worked 20 hours a day in the mountains. During the winter it was used to clear roads, being fitted with a snow plow attachment. After four years of this service it was burned in a garage fire, but after a new electrical system had been installed, new tires put on and a new body built, it resumed work. After two more years it was sold and has since been engaged in the contracting work in Springfield, Mass.

"Few trucks have been subjected to the abuse which this veteran has survived," says Robert O. Patten, truck sales manager of the Pierce-Arrow Motor Car Co., Buffalo, N. Y. "Yet despite its age the truck proves capable of delivering a full day's work with the same economy which has marked its performance throughout its life."

MAKES $40 DAILY PROFIT.

Not only has W. F. Sills, a Colorado farmer, found it profitable to send his own farm made cheese to Denver, 55 miles away, by the use of a truck and trailer, but he also makes a good profit by making deliveries for other farmers along the way. He makes four trips a week and has now installed a regular delivery service. Business has been so good that he has purchased a trailer and is now handling 7½ tons of cheese and milk to the load, not including the weight of the containers. Mr. Sills claims that he clears from $40 to $50 profit daily and is to add a second trailer.

HAULS ITS OWN AXLES.

Some time ago when the railroads were so short of cars that traffic was badly congested, the Clyde Cars Co., Clyde, O., found itself in need of axles for its trucks. To relieve the situation the company sent a five-ton Clydesdale truck to the Timken-Detroit Axle Co., Detroit, and brought back a load of axles. This initial trip proved so successful that the Clyde company has transported all of its axles in this way since that time and finds it is cheaper and more convenient than shipping by railroad.

TEXAS OIL INCREASES LICENSES.

The considerable increase in the registration of motor vehicles in the State of Texas is attributed to some extent to the development of the oil industry in that state, as well as to better business conditions and the great amount of good road construction. The highway department licensed 503,648 motor vehicles between Jan. 1 and Sept. 17, 1919. The total registration for 1916 was 251,118.

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Concern	Address	Representative
Scripps-Booth Corp.	Detroit, Mich.	J. Anderson Roy Bramlett F. N. Lewis W. N. Lindberg
William Small Co.	Detroit, Mich.	Bert Small
Selden Truck Corp.	Rochester, N. Y.	W. C. Barry H. R. Selden
Stutz Motor Car Corp.	Indianapolis, Ind.	W. A. Weidely
Simmons Motor Car Co.	Detroit, Mich.	H. A. Newby
Schacht Motor Truck Co.	Cincinnati, O.	B. M. Shay
Saxon Motor Car Co.	Detroit, Mich.	J. H. Hickey
Standard Steel Car Co.	Pittsburgh, Pa.	C. G. Walter R. S. Ellis
Signal Motor Truck Co.	Detroit, Mich.	H. A. Mitchell
Sterling Motor Truck Co.	Milwaukee, Wis.	H. J. Loebl
Service Motor Truck Co.	Wabash, Ind.	C. A. Versdoor A. P. Mudgett E. T. Herbig
Stewart Motor Corp.	Buffalo, N. Y.	H. S. Townsley
Templar Motors Corp.	Cleveland, O.	M. Bleiweiss
Motor Transport Corp., U. S. A.	Washington, D. C.	Maj. R. A. Osmun W. T. Norton, Jr.
United Motors Service, Inc.	Detroit, Mich.	J. L. Elwood
Universal Tool Co.	Detroit, Mich.	R. E. Roseberry
Union Motor Truck Co.	Bay City, Mich.	H. M. Donegan
Velie Motor Corp.	Moline, Ill.	C. M. Gustine
Westcott Motor Car Co.	Springfield, O.	J. M. Rehe
White Co.	Cleveland, O.	F. H. Stetzel J. H. Faxon, Jr.
Winton Co.	Cleveland, O.	W. H. Doddridge

CUBA IS DISCARDING MULES.

"Good-bye to two-wheeled mule carts and welcome motor truck," is the way in which Senor Silva, a prominent Cuban automotive dealer, now visiting this country, expresses the adoption of the motor vehicle in his country.

"Cuba is home of big sugar industry—mule carts too slow and cost much—American motor truck more speedy and costs little—saves much time and money," is Senor Silva's reason why Cuba is rapidly becoming motorized.

Senor Silva, who distributes Kissel trucks and passenger cars in Havana, gives a glowing description of Cuba as the home of good roads. Wide, white streets, plazas, boulevards and avenues, in the country as well as in the cities, fairly cover the island.

It did not take the Cubans, especially the sugar plantation owners, long to realize that they were producing sugar faster than their transportation methods could deliver the sugar cane to the mills or the finished product to shipping points.

Tourists, as well as representatives of business interests from the United States began telling of the wonderful economies in time, labor and money, motor trucks made possible in the states, resulting in a few trucks being ordered for demonstration purposes.

It wasn't long before the advantages of the truck over the slow moving mule cart were seen by the Cuban business interests, and since then motor trucks have become the most popular means of transporting materials, goods, etc.

WAR ON RIM DRIVERS.

According to the department of public works of the city of Buffalo, N. Y., the asphalt pavements in that section are suffering heavy damage from trucks and cars driven for long distances on rims of wheels from which punctured tires have been removed. The co-operation of the police in stopping the practise has been asked by the department.

FRUIT GROWERS ADOPT THE CLYDESDALE.

After exacting demonstrations and tests, the Florida Citrus Exchange Supply Co., Tampa, Fla., has announced its intention of adopting and recommending the Clydesdale truck, made by the Clyde Cars Co., Clyde, O., for sale to its members. An excerpt from the report of the supervisor of the truck demonstration reads as follows:

"This truck made an excellent grove demonstration, proving that it could go into and come out of the softest ground with a capacity load without serious difficulty, showing that it was entirely practicable for grove work.

"In the road test of three days it made the most remarkable demonstration of endurance, power and efficiency, successfully overcoming adverse conditions that were seemingly unsurmountable. It was proved beyond question that it could pull itself out of any situation where its wheels could get traction.

"Every part of the truck is built with a reserve strength beyond any possible test that can be imposed upon it in practical use and yet, by the excellence of its design and the use of aluminum where not effecting its strength, it has the lightest weight of any truck approximating its strength and power.

"Without question, in my opinion, it stands first in desirability for general grove use for our members."

SAVES $8000 A YEAR.

Pneumatic tires are now operating successfully in many kinds of service for which they were formerly thought not to be adapted. For instance, the Long Leaf Pine Co., Sydney, Fla., owns a big lumber truck equipped with Goodyear pneumatic tires, which is used in hauling lumber three miles from the mill to the railroad. The truck makes seven trips daily, performing the work formerly done by two teams of mules at a saving of about $8000 a year.

BETTER TERMINAL FACILITIES.

The strike at the docks in New York City has again called attention to the necessity for improving the terminal facilities of the Metropolis. It is claimed that they have been developed neither scientifically nor with a view for future needs. The city has outgrown its present terminal capacity, and it is imperative that immediate steps be taken to alleviate the situation. Attention is called to the fact that the piers, being long and narrow, make it difficult for a consignee to reach his goods so that they can be hauled to his warehouse. Long lines of slow-moving horse drays clog the entrance to the piers and block street traffic. Under these conditions it often takes 12 hours to accomplish what should take only one hour. And besides losing a great many hours a day the vehicles average only 43 per cent. of their capacity load. Merrill C. Horine, a transportation authority, states that if all horse transportation at the New York docks could be replaced by motor trucks, the number of vehicles required to carry the same daily tonnage would be 1/10th the number used at present.

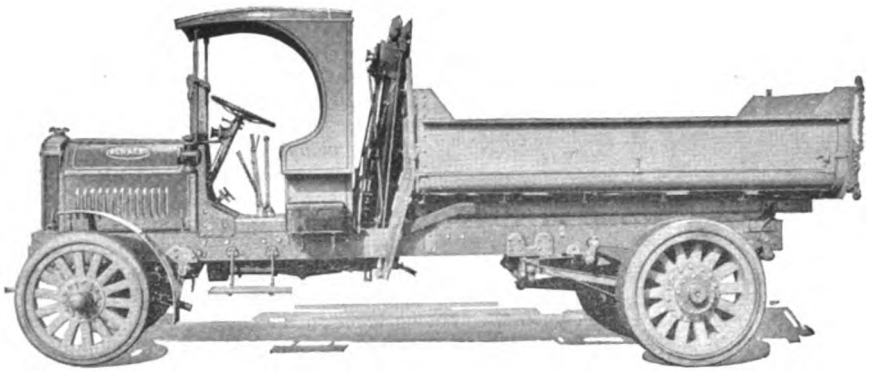
Trucking interests recognize that the motor truck is the logical successor to the horse, as it embodies greater speed and endurance, can carry heavier loads, travel longer distances and is more economical on a ton-mile basis, but in order to get the full benefit of truck operation, they realize the necessity for improvement in the terminal facilities of the harbor. While it is hoped that the vehicular tunnel which is to be constructed by the states of New York and New Jersey, will in a large measure exempt the Metropolis from a threatened food and fuel famine every time the shippers and their employees disagree, the completion of this tunnel cannot be regarded as a panacea in relieving the congested condition of the terminals along the North and East rivers. What is needed is a more rapid means of clearing these piers, modern terminals, modern loading and unloading devices, arranged so that fast motor trucks can obtain their loads without waiting.

MORE EISEMANN CONTRACTS.

Announcement has been made by the Eisemann Magneto Corporation, Brooklyn, N. Y., that it has made contract for the magneto equipment for "Argonne 4" special roadsters, a new car that will be built by the Jersey City Machine Co., Jersey City, N. J., under the supervision of Charles A. Singer; and also that it has renewed contracts for similar equipment with the Winther Motor Truck Co., Kenosha, Wis.; Dart Truck & Tractor Corporation, Waterloo, Ia., and the Toro Motor Co., Minneapolis, Minn., and has also made contract for magnetos for the "Dixie Flyer" passenger cars built by the Kentucky Wagon Co., Louisville, Ky., which concern has used this equipment for its trucks for a considerable period of time.

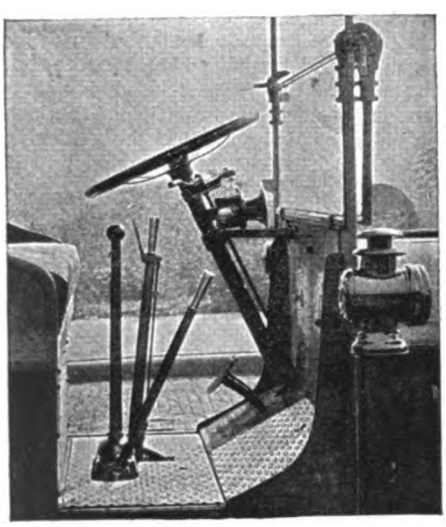
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SCHACHT 10-SPEED RATIO GEARSET



The New Schacht Five-Ton Heavy Duty Truck Chassis Is Equipped with Novel Transmiss on Gearset Having Secondary G ear Ratios.

WHAT is claimed to be distinctively new as applied to heavy duty truck design is incorporated in the transmission gearset in the five-ton trucks now being built by the G. A. Schacht Motor Truck Co., Cincinnati, O., and this is believed to be the first time that a gearset of this description has been constructed with eight forward and two reverse speed ratios. This is stated to be a power reduction of so wide a range that exceptionally effective pulling power on low and intermediate ratios, as



The Footboard and Control Members of the Schacht Truck, Showing the Secondary Gear Ratio Lever.

well as rapid vehicle speed, are always available.

The primary object of utilizing this gearset is to obtain what may be regarded as fast speed when conditions justify without driving the engine to excessive speed, and statement is made that much of the failure of heavy trucks is due to the engines being driven faster than they will endure. Rapid wear of engines is maintained to result when five-ton trucks are driven 14 or 15 miles an hour when empty or on level roads, for the drivers will generally force them to the limit. The vibratory stresses from the engines is communicated to the mechanical structure and the wear is abnormal.

The new Schacht truck is designed so that it may be driven 20 miles an hour with an engine turning 1000 revolutions a minute, and claim is made that this increased speed, where the conditions will allow, increase the earning capacity of the machine and lessen the cost of operating. If the engine can be kept at a constant speed it will have maximum life and efficiency.

Adaptation to All Road Conditions.

Statement is made that with this type of gearset the power of the engine can be more closely adapted to the road conditions. Adequate power to move anywhere is always available provided the wheels have traction, and faster movement on grades is possible since the gear ratio that will afford maximum speed can be used.

Main transmission gearset has four forward speed ratios and reverse, the fourth ratio being direct. The secondary gearset affords an additional reduction that can be used with any one of the ratios of the main gearset, this being in effect a reduction from any one of the ratios, and these are obtained by movement of an auxiliary lever, which rocks forward and backward. The construction maintained to be just as simple as the standard type four-ratio gearset.

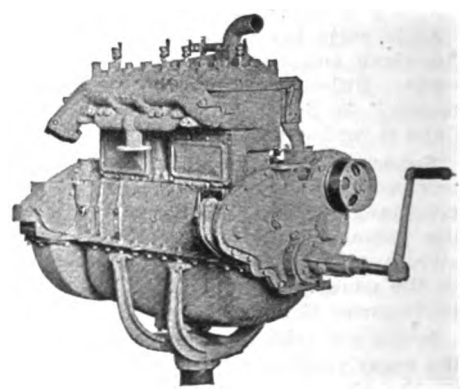
The new Schacht truck is equipped with a heavier engine having bore of 4½ inches and stroke of six inches, which has a rating of 32.40 by the S. A. E. formula, and the engine is claimed to be designed to endure the stresses of increased vehicle speed and load carrying. The engine is simple and accessible and can be kept in good operating condition by the average driver or repairer with minimum labor and time. The engine is lubricated by a full force feed pressure system to all crankshaft and crankpin bearings through a drilled crankshaft, and the cylinders and other reciprocating parts are supplied by oil distributed from the lever ends of the connecting rods.

The transmission gearset, as will be noted in an accompanying illustration, is independent of the engine and is suspended on frame cross members, but the power is transmitted through a two-section driving shaft. The drive is the Hotchkiss system, with a heavy torque arm paralleling the shaft.

The Schacht rear axle is a worm driven type that is built in the factory and is claimed to be a superior product. The company produces a very large part of the main construction units in the truck chassis, including frames, steering gears, transmission gearsets, control sets, rear axies, etc.

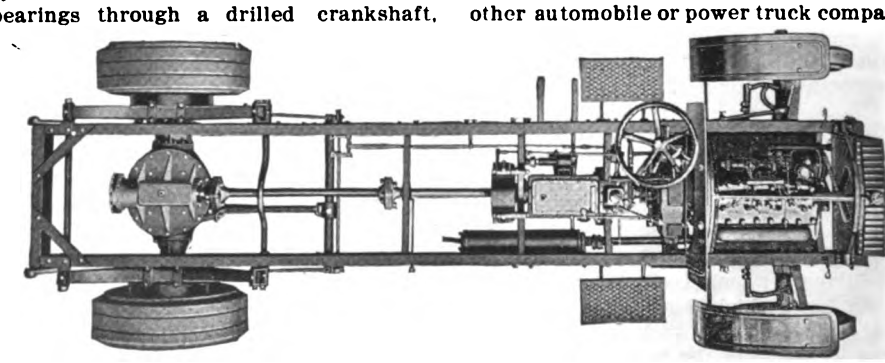
NO CHANGE IN ITS INTERESTS SAYS GARFORD CO.

Statement has been issued by the Garford Motor Truck Co., Lima, O., that rumors to the effect that the control of the company has passed into the hands of John N. Willys of the Willys-Overland Co. are without foundation of fact, and that neither Mr. Willys nor the Willys-



The Engine of the Schacht Five-Ton Truck, a New and Exclusive Design That Is Claimed Highly Efficient.

Overland Co. have a financial interest in the company. The statement includes that on Jan. 13, 1915, the interests of the Willys-Overland Co. and all other interests in the Garford plant were purchased by the present organization, and since that date that management has controlled the concern. It is an independent corporation and has no affiliation with any other automobile or power truck company.



Plan View of the Schacht Five-Ton Heavy Duty Truck, the Transmission Gearset Being Independent, but Driving a Two-Sec tion Shaft.

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NEW CORNFIELD RESILIENT WHEEL

DESIGNED to what is regarded as a new principle, the Cornfield wheel, built by the Cornfield Wheel Co., Inc., Detroit, is claimed to have qualities unlike any other wheel now used for power vehicles. The Cornfield unit is not a spring wheel, but it is spring mounted so that, according to the claims of the maker, practically all shocks upon the wheel are absorbed by the secondary springs surrounding the axle, instead of being communicated through the wheels to the axles.

In effect on each axle is a frame that is permanently positioned in which is eight springs, three above and three below, and one each forward and behind, and the wheel hub revolves between the springs. The springs are installed so that there is a certain degree of tension upon them and this affords steadiness. The design might be well described as a buffered axle.

There is, of course, specific action of the springs, but the load is carried by the upper springs and the recoil of these is absorbed by the lower springs, and the same result obtains when there is stress on the forward or rear springs, either from starting or braking.

The illustration accompanying clearly shows the wheel in cross and cutaway section, as well as the entire wheel, which, as will be noted, is a steel disc type. The manufacturer claims the wheel is resilient, which is a somewhat different use of the term than is applied in automotive practise.

One or Two Universal Joints.

In the drive wheel for internal gear and chain and for live shafts there is a universal joint so that the housing can deflect while the vehicle is turning. But in the chain and internal gear drive types there is one universal joint at the brake, and when the construction includes a live shaft there are two universal joints, the forward one to drive and the other for the brake.

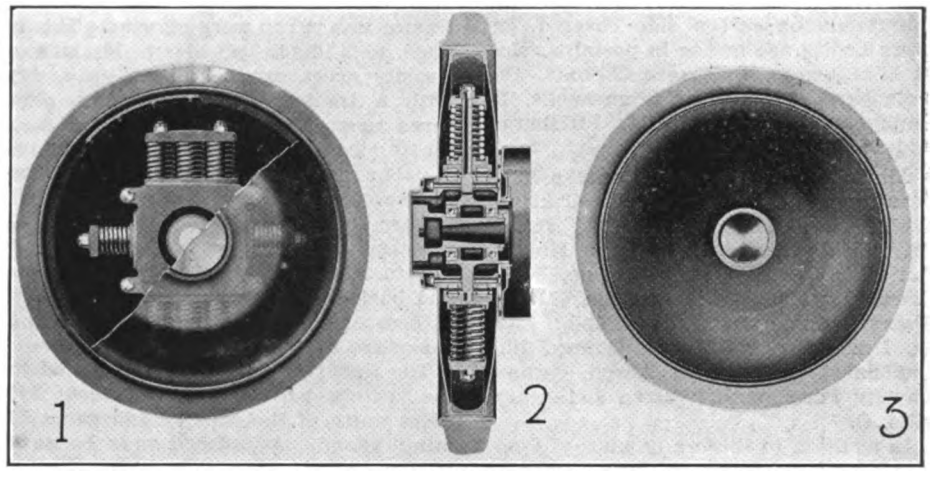
The wheels are equipped with roller bearings and statement is made that the linear pressure upon the rollers is much less than with any other type of wheel, as the bearing surface by the novelty of construction is proportioned to the requirements, and the frictional pressure is lower than in any other wheel. This low pressure minimizes the possibility of bearing wear and the accompanying complications.

Two Full Series of Parts.

The wheel may be defined as having two series of parts, turning and stationary, and the former series includes the tires, wheel discs, bearings, the inside race and the drive is through the universal joint, which is connected with the drive flange, and the drive flange and the discs are connected with the inside race. All of these are turned with the shaft. The stationary series include the outer race, the spider block springs, spring bolts, spring plates and spring bridge, which always remain at right angles, as the spider block is keyed to the shaft or shaft housing, depending upon the design of the drive.

On the four sides of the square center or outer races are placed plates, which carry the springs and slide on the square center or outer races horizontally and vertically, carrying the springs under compression, these supporting the load and absorbing the shocks in every direction. On the four sides of square center or outer race are sliding spring plates. The plates fit around the spring and the springs are installed on the plates and under the bridge, and are forced down under tension.

The spider block is placed between and bears against each side of the square center or outer races, which keeps the floating hub springs and bolts, spring plates, spring bridge and the square center rigidly at right angle at all times, thus affording both horizontal and vertical deflection of the springs, but preventing any torsional or side thrust upon them.



Cornfield Resilient Wheel: 1, Sectional and Partial Phantom View, Showing the Mounting of the Suspension Unit; 2, Cross Section, Illustrating the Manner of Mounting on the Driving Shaft; 3, the Outside of the Wheel, a Plain Disc, the Rim Being Adapted for Any Standard Solid Truck Tire.

The Action of the Springs.

The spring action is as follows: The upper springs carry the load and the lower springs absorb the recoil, and when the vehicle is started by engaging the clutch the horizontal front spring is compressed, absorbing practically all the shock. When the brake is engaged the rear horizontal spring takes the stress. Statement is made that the spring action is substantially as is that of a pneumatic tire, save that it is better because the absorption is complete, as there is compensation of both compression and recoil, or practically a snubbing. Claim is further made that practical demonstration and tests have determined that by placing springs in the wheel with a factor of safety of not less than 600 per cent. over the carrying load the springs are then sufficiently stable and have adequate absorption for all shocks.

Sudden resistance or shocks upon the wheel tires will be transmitted to the springs and will cause the housing to move vertically or horizontally, causing slight and temporary eccentricity, but these changes insure the compensation of all positive stresses.

Excess Weight Steadies the Wheel.

The revolving part of the wheel consists only of the tire and the side plates or discs, so that the excess weight does not turn, which insures easy suspension, just as does the ballasted floor of a Pullman car. The excess weight is not gyroscopic. By the construction of the wheel traction is claimed to be surer and braking easier and safer, and speed and the shock absorption is such that the tire is fully protected, and will not rupture at the union of the tread and base. This being so, tire wear is restricted to a minimum due to road abrasion.

The wheel springs are installed under tension and the movement of the axle is controlled by the cushioning influence of the springs when the shock is sufficient to compress them either downward or forward or backward. But if some of the springs are compressed the movement of the axle is followed by the springs not under compression, and action beyond a center position is met by the other springs as the compressed springs recoil. If, for instance, the upper and lower springs have a carrying capacity of 10 tons, and the load is one ton, the action of the load is against equalized spring pressure which would absorb it easily and without vibratory stresses being carried to the other mechanical parts of the vehicle.

The construction of the wheel is such and the factor of safety so large there is no possibility of the springs breaking. The carrying capacity of the springs for a given load is 100 per cent. greater than capacity of the main frame springs, but there is the same flexibility to the empty truck as when a load is carried. Statement is made that should the wheels sustain a shock that would completely compress the springs either the axle or the main springs would be broken.

These wheels are to be made in all sizes that will be used with truck chassis and will be standardized as to parts.

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COMMERCE TRUCKS TRANSFERRED TO POSTOFFICE DEPARTMENT.

Included in the thousands of trucks transferred by the War Department to the various departments of the national government (the majority of which went to the Department of Agriculture and the Postoffice Department), were a large number of Commerce machines, and something more than 500 of these have been taken over by the division of the postal service under the direction of First Assistant Postmaster General John C. Koons, who supervises the operations of the postoffices with reference to collection, distribution and transfer of mail in cities and towns having carrier service.

These trucks were built for transporting machine guns and crew, and a part of the number contracted for were shipped abroad with the American Expeditionary Force, and others were placed in service in the various cantonments, camps, posts and garrisons, and some were not delivered until after the conclusion of hostilities.

Commerce truck chassis, equipped with the regulation screen side covered express bodies are in use in postal service at Washington, Baltimore, Atlanta, Detroit, Milwaukee, Toledo, Minneapolis, St. Paul, Cleveland, Nashville, Pittsburgh and St. Louis.

Allotments of Commerce trucks have been made San Francisco, Oakland, Berkeley and Los Angeles, Cal.; Jersey City, N. J.; Augusta, Ga.; Des Moines, Ia.; Kansas City, Mo.; Racine, Wis.; Grand Rapids and Kalamazoo, Mich.; Evansville and Indianapolis, Ind.; East St. Louis, Springfield and Quincy, Ill.; Cincinnati, Youngstown, Akron, Canton, Dayton, Portsmouth, Warren and Zanesville, O.

In addition to these a number of Commerce trucks have been turned over to the division of Fourth Assistant Postmaster General James I. Blakslee, which operates the rural delivery and parcel post routes, and these are in service at postoffices in Pennsylvania, Maryland, District of Columbia, Virginia and Washington.

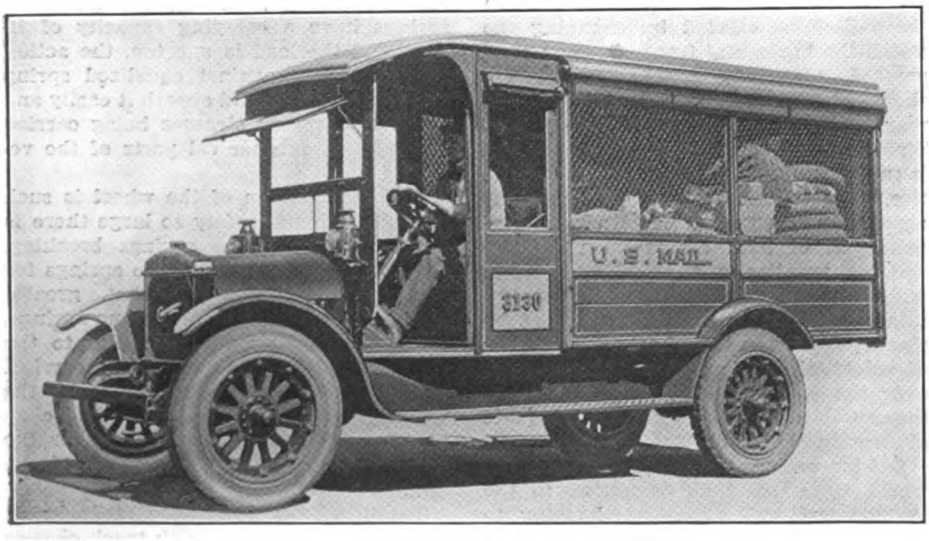
GOODYEAR OPERATES RUBBER PLANTATION.

With the idea of protecting its rubber supply back to the tree through its own concessions, several years ago the Goodyear Tire & Rubber Co., Akron, O., sent representatives to the island of Sumatra in the East Indies to investigate the rubber plantations there. The Goodyear company finally secured a concession of 20,000 acres near the city of Medan, Sumatra, 5000 acres of which it now has under cultivation.

The plantation is divided into six parts, each approximating 3000 acres and having its own manager. Except on the small portion that had already been planted when the purchase was made, it was first necessary to clear off the thicket. The vines and undergrowth were cleared away and then the trees were felled. In this work 1300 Chinese coolies and a large force of natives were employed. Then, preparatory to planting the young rubber trees, good roads were built that all parts of the plantation might be reached easily and quickly. After the land had been cleared the big steam tractor was put to work plowing. This is done to a depth of about 18 inches. Twenty acres can be plowed in a day with a tractor; 250 coolies can plow three acres in the same time. The tractor is also used in pulling out stumps.

Labor troubles are practically unknown, for 20 cents a day and a fair shelter keep the coolies contented. Coal shortages and high prices have few terrors in a land where food grows on trees and bushes and the sun provides plenty of heat and renders the use of clothing superfluous.

The Goodyear plantation is located in the eastern part of Sumatra about 300 miles north of the equator and about 50 miles inland. A railroad runs between Medan and Siantar and a government highway passes through the plantation, so that transportation problems are reduced to a minimum. The entire rubber growing project is conducted with the same efficiency that characterizes operations at home, so that the results are entirely satisfactory.



Commerce Truck Chassis Equipped with the Side Screen Express Body Used by the Postoffice Department in Its Service.

TRAFFIC PSYCHOLOGY.

The Concrete Highway Magazine for October cites an instance of what it terms "Traffic Psychology." On the Baltimore-Washington road there are two sections of concrete nearly adjoining which were built at about the same time. One of the sections was laid half the width at a time; the other for the full width of 20 feet at one time. In the former there is a joint at the center plainly seen, through not an expansion joint. This thin mark at the center has served to keep traffic to the right side of the road, for its direction of travel is plainly evidenced by the two lines of oil marks, while scarcely any oil has been dropped at the center. On the second section, which has no such mark at center, the oil droppings spread over the whole width, being much more noticeable at the middle of the road. This shows conclusively the effect upon drivers of merely a line at the center of a smooth road.

A two-fold result is secured: Traveling on the highway is made safer as approaching vehicles each keep to their proper side of the road. Less shoulder maintenance is required, as traffic is not forced off the road on to the shoulder and there is less use made of them.

Chief Engineer Mackall of the Maryland state road commission, proposes to paint a stripe along the center of all sections on the Baltimore-Washington road, and C. M. Upham, state highway engineer of Delaware, has decided to do the same on the highways of that state.

RECORDS OF CUSHION TIRES.

William Moreland, president of the Moreland Express Co., Newark, N. J., speaks of the somewhat unusual tire record made in the service of his company by cushion tires, manufactured by the Goodyear Tire & Rubber Co., Akron, O., on its two-ton trucks. "In three years of punishing service," he says, "these tires have run 40,000 to 45,000 miles each. We consider this mileage wonderful. Our business requires trucks to travel over all parts of the state and over all conditions of roads. These tires have gone through without trouble and have protected the trucks so that our repair bills are very much less than ordinary in this class of work."

Another instance of the satisfactory service rendered by cushion tires is the experience of the Boston store at Chicago. Two years ago three trucks were equipped with Goodyear cushions with results that led to the fitting up of the store's entire fleet of 22 trucks with these tires. One result that soon followed was an approximate saving of 25 per cent. in truck maintenance costs. To date the average mileage has mounted to 30,114 with satisfaction in every respect.

The Bay State Pump Co. has removed to 564 East First street (King terminal), South Boston, Mass., where it has greatly increased facilities for manufacture and shipment.

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TRUCKS AT TRENTON FAIR.

Tractors, trucks, passenger cars and agricultural machinery were big attractions at the recent Inter-State fair, Trenton, N. J. Over 50 vehicles, comprising 30 different makes were shown, a large number being equipped with bodies suitable for various kinds of hauling on the farm. Farmers from sections having sandy soils were especially interested in the pneumatic tired vehicles, as their traction qualities in sand are so pronounced.

The Samson Tractor Co., Janesville, Wis., exhibited its products here for the first time in the East. They included the Samson ¾ and 1¼-ton trucks, which may be equipped with extension rims on the wheels so as to give traction under the worst conditions; the models M and D Iron Horse tractors and the Samson nine-passenger car which is listed at $750.

Other trucks shown included the Acme, Autocar, Rockway, Chevrolet, Clydesdale, Day-Elder, Denby, Dort, Federal, Ford, Hahn, International, Jumbo, Kelly-Springfield, Keystone, Kissel, Mack, Nash, Norwalk, Packard, Paige, Reo, Republic, Rowe, Selden, Sterling, Stewart, Vim and White.

RELATION OF AGE TO REPAIRS.

According to data collected by the United States bureau of markets, the cost of repairs increases with the age of the truck. Those operators who have purchased used equipment have found their repair bills relatively higher. Repairs during the first year's service of the new truck are not a very serious consideration. When the truck is in more or less continuous use throughout the year, it is usually laid up once each year and given a complete overhauling. The cost of this depends on the age of the machine, the care which it has received and its size.

The figures of the bureau of markets show that the annual cost of overhauling the motor truck ranges from about $100 to as high as $800 or $900. Those operators who make it a point to keep their trucks in a constant state of repair have relatively small charges to meet for annual overhauling. Those who operate their machines as long as possible with no regular repairs must often face an extremely heavy charge for repairs at the end of the year. Where care is used in handling the truck, the cost of repairs will be much less than where no attempt is made to exercise reasonable supervision over operation.

TAXICABS IN SINGAPORE.

According to a prospectus recently issued, a company is soon to be established at Singapore, Straits Settlement, known as the Singapore Motor Taxicab and Transport Co., the object of which will be to provide the city with an up-to-date transport system. It is said that the service will comprise 40 landaulette taxicabs, five one-ton and five ¾-ton trucks.

Singapore has a population of 300,000.

MULTIPLE OPERATIONS INCREASE AXLE PRODUCTION.

Uniformity of quality of product is an absolute necessity, and where the assembly is complicated necessarily each operation must be exact and the tolerances are extremely close.

One of the major products of the Wisconsin Parts Co., Oshkosh, Wis., is worm drive axles of differing capacities and the care given to uniformity and care in production is shown in the accompanying illustration of a Beman & Smith planer type milling machine that was recently added to the equipment of the plant.

As will be noted, the machine is equipped with four milling heads, so that four operations can be completed on eight axle housings at one time. The machine is driven by direct current motors, directly connected with all controls in reach of a single operator. The total weight of the machine is more than 26 tons and this weight is distributed so as to insure perfect and permanent alignment necessary to maintain the accuracy necessary in axle building.

The great table or platen of the machine is driven by a worm which is so constructed to have slow feed and quick return. The tool will machine 200 housings in an eight-hour day, eight at a setting, and do the work precisely alike. The demand for axles is such that the company has increased its facilities in space and equipment several times within a few months. The board of directors has authorized an addition to the main plant of a building 240 feet long and has purchased much new machinery to keep up with the production. The company is claimed to be the largest independent producer of rear axles for trucks not affiliated with other parts makers or truck manufacturers.

Rumors have been current that the company was controlled by motor truck interests, which has caused a statement by President and General Manager W. F. Rockwell to the effect that the number of stockholders is limited and having personal acquaintance with them he can state none has any interest in any truck or accessory concern. The company has taken no additional orders since Aug. 1 and the extensions planned are to handle new business. The company is preparing to increase its capital, but is not ready to make a statement of its plans.

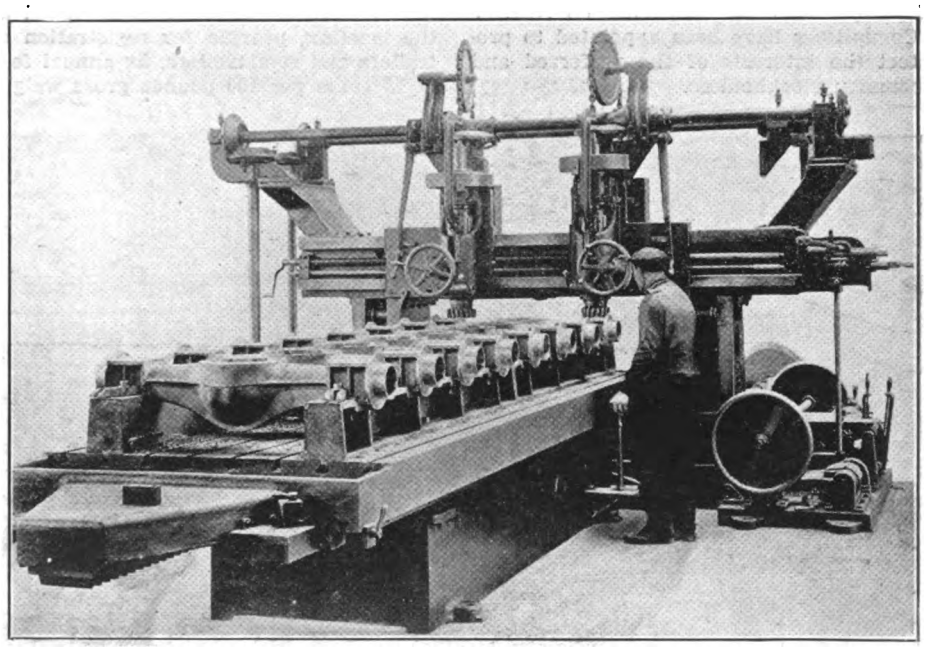
Superintendent J. L. Armstrong has resigned to take effect Nov. 22, and he will be succeeded by F. R. Conroy, formerly with the Ingersoll-Rand Co., the Willys-Overland Co., the Garford Co. and the Cadillac Tool Co., resigning from the last mentioned to make a new connection.

TRUCKS IN PHILIPPINES.

In 1918 the total number of trucks registered in the Philippine Islands was 507, with a tonnage of 341,000 pounds and a passenger capacity of 6540. For the same period the total register of automobiles shows 2318 cars of 114 different makes and with an aggregate passenger capacity of 22,817 passengers. The total value of motor vehicles and parts, including rubber tires, imported into the islands in 1918 was $3,262,833.

Following is a statement of the roads and number of bridges and culvert construction in the Philippine Islands during the year: First class roads, 3309 miles; second class, 1200 miles; third class, 2099 miles; total of bridges and culverts of steel, concrete and brick, 7370. The total expenditure on road and bridge work shows a gradual increase for the past few years. The amount expended for the fiscal year 1914 was $2,226,000; 1915, $2,156,000; 1916, $2,960,000; 1917, $3,074,000. The figures for 1918 have not yet been reported.

The Filipinos know that for the proper development of their natural resources foreign capital is needed and for this reason it is welcomed, supported and encouraged.



Beman & Smith Planer with Four Milling Heads, with Which Four Operations Are Made on Eight Axle Housings at One Time in the Plant of the Wisconsin Parts Co., Oshkosh, Wis.

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SEEK PERFECT BUSMAN.

The Fifth Avenue Coach Co., New York, is seeking a perfect busman and, in this effort to obtain a service record of 100 per cent. for courtesy and efficiency on the part of its employees, has offered its patrons cash prizes aggregating $250 for the 12 best suggestions or criticisms which would enable the company to make any improvement in its service. John A. Ritchie, president of the company, said he believed that the public was entitled to as nearly 100 per cent. service as it is humanly possible to give.

"Based on letters of commendation and complaint received by the company," said Mr. Ritchie, "we have figured it out that the present courtesy record of our drivers and conductors is 98 per cent. dividend as follows: Courteous under all circumstances, 98 per cent.; irritable under great provocation, 1½ per cent.; irritable under slight provocation, ½ per cent. This is a bully record, but we believe it can be made better and we are going to do everything in our power to wipe out that two per cent."

ROCKFORD TO HAVE BUS LINE.

Fay's Bus Co. has been organized and its petition to operate a line of busses to sections of the city not reached by the street cars has been approved by the city council of Rockford, Ill., and a certificate of convenience and necessity will be asked of the state board of public utilities. The operation of the busses is strongly opposed by the traction company, it is said. The promoter, Thomas C. Fay, has agreed to put into service a fleet of 20 to 30 motor busses, which will take care of suburban deliveries and may be extended to rural express service.

A receiver was appointed for the Fulton Motor Truck Co. by the United States District Court for New York on Nov. 8. Committees have been appointed to protect the interests of the preferred and common stockholders.

Uniform Traffic Bill Provides for all Trailer Units

Washington, Nov. 17.—At a meeting held at the headquarters of the Federal Highway Council it was decided to incorporate the recommendations of the Trailer Manufacturers' Association of America in the uniform traffic bill which has been in process of formulation for more than a year.

There has long been widespread demand for nation wide uniformity in motor vehicle laws by motor truck owners whose business requires them to operate in several adjoining states and also by automobile users who travel extensively by motor car. The inconvenience and absurdity of having different regulations in neighboring states is recognized by state authorities, who have displayed keen interest in the forthcoming draft of a measure which is designed to make such regulations uniform through the country.

Trailers are such a recent development in highway transportation that very few states license them or have any regulations covering their operation. Within the last year or two Massachusetts, Connecticut, Pennsylvania, Indiana, Michigan, Illinois, Wisconsin, Texas and California have enacted some trailer legislation, but it was evident that the legislators were unfamiliar with the types of trailers in service, the ways in which they are used and the probable future development along this line.

It was deemed desirable by the trailer manufacturers, for these reasons, to offer constructive suggestions for legislation that would insure protection of improved highways and safety to users thereof without operating to retard the development of a new and economical means of transportation of great benefit to the whole public.

The recommendations, as approved at the meeting, provide for registration of trailers and semi-trailers, fix annual fees at 15 cents per 100 pounds gross weight of trailer, body and rated load capacity on pneumatic tires, 25 cents on solid rubber tires and 35 cents on iron or steel tires.

They require one number plate on the rear end, limit weight on any one axle to 22,400 pounds, weight per inch width of tire to 800 pounds, and the maximum length of trailer trains, including towing vehicle, to 85 feet.

The provisions call for use of a safety chain to prevent a trailer breaking away from the towing vehicle and a white light to be carried at the front of each trailer at night and a red light at the rear end of the last trailer.

They provide also that the weight of the trailer and its carrying capacity must be shown on the side, and authorize highway authorities, at their discretion, to issue special permits for the operation of trailers exceeding weights and dimensions fixed in the bill.

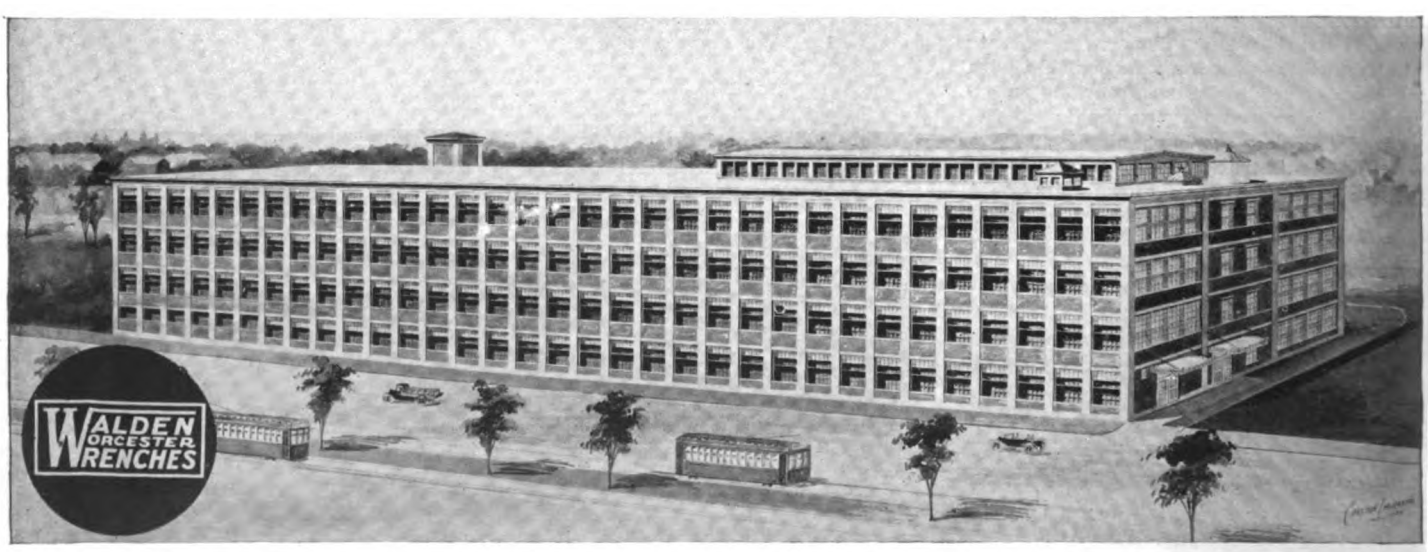
National organizations represented at the meeting were the Federal Highway Council, Highway Industries Association, National Automobile Chamber of Commerce, Motor and Accessory Manufacturers' Association, American Automobile Association. Trailer Manufacturers' Association and National Automobile Dealers' Association.

The uniform traffic bill is now being redrafted to include the trailer provisions and will be submitted for final approval of these associations and to the Association of State Highway Officials. It will then be printed and offered for introduction in the 12 states whose legislatures meet next January.

REOS IN OIL FIELDS.

The Gypsy Oil Co. of Okmulgee and Tulsa, Okla., has 85 Reos in service in the oil fields of that locality. Its scouts, who must travel continuously in search of new wells, use Reo roadsters, and the "shock troops" who follow in their wake, use "Speed Wagons."

The Independent Torpedo Co. of Tulsa, Okla., uses 60 Reos for its oil "shooting" crews, most of them being "Speed Wagons" for hauling nitroglycerine.



The New Plant of Walden-Worcester, Inc., Now Being Erected at Worcester, Mass., Which Will Be the Largest Factory in the World Producing Wrenches Exclusively for the Automotive Industry.

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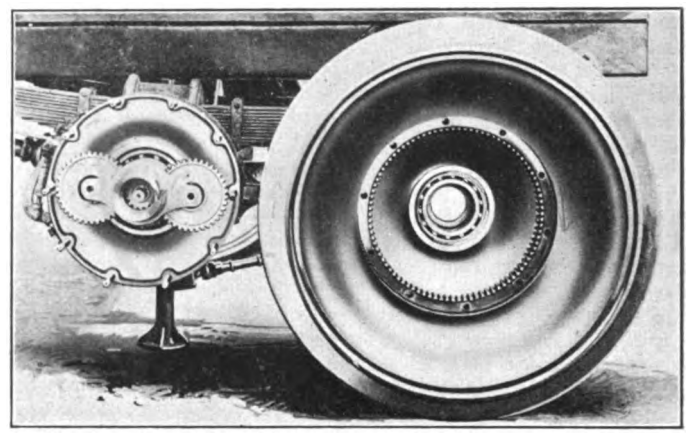
EDWARDS INTERNAL GEAR DRIVE AXLE

WHAT is known as a "balance gear" driven axle has been designed and perfected by the Edwards Valve and Manufacturing Co., Chicago, and the purpose of the company is to produce these for commercial sale. The axle is a type that has never been sold in the automotive industry, and yet it has been used for years and has been tested in service covering approximately 12 years.

The design is an adaptation of the type that had been peculiar to the Walker electric trucks, built by the Walker Vehicle Co., Chicago, and the intention is to build it in sizes suited to from one to 10-ton trucks. Numerous claims are made for this type of construction, one of which is noiselessness, for the gears are all enclosed in oil-tight compartments, and all bearings and gears are completely submerged in lubricant.

The accompanying illustration clearly shows the characteristics of the design. The axle housing encloses the axle shafts, which are driven by a differential gearset and driving pinion, and on the ends of the shafts are pinions that mesh with two intermediate gears, one forward and the other back of the shaft, and these gears mesh with an internal gear that is bolted to the wheel. The design is somewhat modified as contrasted with the original Walker construction, in which the intermediate or idler gears were large and these meshed with a rack or internal gear that was incorporated with the inner periphery in the wheel, the entire mechanism being enclosed by the large disc of the driving wheels.

As the reduction is mainly outside of the differential gearset the action of the differential is minimized when pulling through sand or on a muddy street surface, and yet it is adequate when turning corners. The driving mechanism is self-contained, is a unit within itself, and it is easily accessible for inspection or repairs.



The Edwards Internal Gear Driven Rear Axle with the Outer Wheel Disc Removed to Show the Axle Pinion, Idler Gears and Ring Gear, All Enclosed in a Steel Wheel.

The drive itself is positive, with an efficient form of gearing. The oil-tight housing fully protects it against dust and abrasives, insures against oil leakage, and the brakes are at all times clear and fully efficient. The final reduction is independent of the brake drum.

The idler gears are mounted on substantial roller bearings fitted into the ends of a yoke that is securely clamped to the ends of the steel axle housing, and is securely seated with an extension into the bore of the housing, this adding strength and carrying capacity to axle.

COMING EVENTS.

Dec. 1-6—Des Moines, Ia.; second annual tractor show.

Feb. 9-11—Wichita, Kan.; tractor and farm machinery forum, Wichita Thresher-Tractor Club.

Feb. 24-March 1—National tractor show, auspices Kansas City Tractor Club; Guy H. Hall, manager, Sweeney building.

Nov. 21-29—Jacksonville, Fla.; Florida state fair and exposition; B. K. Hanafourde, manager.

Dec. 19—Detroit, Mich.; Society Automotive Engineers, Hotel Pontchartrain.

Dec. 2-4—Peoria, Ill.; convention Illinois Implement Dealers' Association.

Dec. 2-4—Des Moines, Ia.; convention Iowa Implement Dealers' Association.

Dec. 2-4—Saginaw, Mich.; Michigan Implement and Vehicle Dealers' Association.

Dec. 3-5—Indianapolis, Ind.; convention Indiana Implement Dealers' Association.

Dec. 3-5—Cleveland, O.; annual convention, Ohio Auto Trade Association.

Dec. 9-11—Oklahoma City, Okla.; convention Oklahoma Hardware and Implement Association.

Dec. 27-Jan. 4—Akron, O.; automobile show, Central Garage.

Jan. 3-10—New York City; Grand Central Palace, National Automobile Chamber of Commerce. S. A. Miles, manager.

Jan. 3-10—New York City; Eighth Coast Artillery Armory, commercial cars and accessories.

Jan. 6-8—Omaha, Neb.; convention, Mid-West Implement Dealers' Association.

Jan. 8-15—Chicago, Ill.; Chicago Aircraft Exposition.

Jan. 13-15—Minneapolis, Minn.; Minnesota Implement Dealers' Association.

Jan. 13-15—Kansas City, Mo.; Western Retail Implement Vehicle and Hardware Association.

Jan. 17-24—Cleveland, O.; Cleveland automobile show, Wigmore Coliseum.

Jan. 17-24—Montreal, Que.; Montreal motor show, Grand Palais.

Jan. 19-24—Cleveland Automobile Manufacturers and Dealers' show, Fred H. Caley, manager.

Jan. 20-22—St. Louis, Mo.; convention Mississippi Valley Implement and Vehicle Dealers' Association.

Jan. 20-23—Spokane, Wash.; Pacific Northwest Hardware and Implement Association.

Jan. 24-31—Chicago, Ill.; Coliseum, cars; Drexel Pavilion, trucks; National Automobile Chamber of Commerce; S. A. Miles, manager.

Jan. 24-31—Chicago, Ill.; International Amphitheater, commercial cars and accessories.

Jan. 26-31—Amsterdam, N. Y.; automobile show, benefit of Co. H, N. Y. State Armory, Amsterdam, N. Y.

Jan. 27-30—Louisville, Ky.; convention Kentucky Hardware and Implement Dealers' Association.

Jan. 27-30—Portland, Ore.; convention, Oregon Hardware and Implement Dealers' Association.

Jan. 28-31—Louisville, Ky.; Kentucky Hardware and Implement Dealers' Association; M. J. Stone, secretary.

January—Glasgow, Scotland.; Scottish motor exhibition.

February—Manchester, England; North of England motor exhibition.

February—Deadwood, S. D.; annual show, Deadwood Business Club; F. R. Baldwin, manager.

Feb. 9-13—Louisville, Ky.; annual show and convention, American Road Builders' Association; 10th annual good roads congress; 11th annual good roads show.

Feb. 10-14—Greenfield, Mass.; automobile show, benefit of Co. A. Massachusetts State Armory, Greenfield, Mass.

Feb. 9-14—Nashville, Tenn.; annual show, Nashville Auto Trade Association.

Feb. 23-28—Automobile show, benefit of Co. F, Massachusetts State Armory, Pittsfield, Mass.

Feb. 23-28—Louisville, Ky.; 12th annual convention, Automobile Dealers' Association, First Regiment Armory.

Feb. 24-March 1—Kansas City, Mo.; motor car dealers' show, Convention Hall; trucks, passenger cars and accessories.

March—Adelaide, Australia; all-Australian exhibition of motor vehicles, airplanes, engines and automotive equipment.

March—London, Eugland; motor boat, marine and stationary engine exhibition.

March 1-6—Eighteenth annual automobile show of Buffalo Automobile Dealers' Association, Broadway Auditorium.

March 13-20—Boston, Mass.; Boston automobile and truck show, Mechanics' building; Chester I. Campbell, manager.

March and April, 1920—Pretoria, South Africa; South African products exposition; overseas motor vehicles especially featured.

April 13-May 4—Buenos Aires, Argentine Republic; exposition of United States manufacturers.

April-May—London, England; commercial vehicle exhibition, Olympia.

May 15-20—San Francisco, Cal.; seventh annual foreign trade convention.

TRUCKS IN UNITED STATES.

According to statistics recently compiled by the B. F. Goodrich Rubber Co., Akron, O., there are 314,029 motor trucks licensed in the 24 states, which make a separate tabulation of these vehicles. From this the estimate is made that the total for the Union would reach over 700,000.

The states which record trucks separately and their registration follow:

Ohio, 57,000; Massachusetts, 38,149; Pennsylvania, 36,619; Michigan, 30,675; New Jersey, 16,660; Connecticut, 16,340; Kansas, 10,000; Tennessee, 10,000; Maryland, 9810; Wisconsin, 9700; Kentucky, 9230; South Carolina, 9000; Kentucky, 7789; North Carolina, 6600; Rhode Island, 6300; Florida, 6175; Georgia, 6000; Maine, 5219; Utah, 4478; West Virginia, 4670; New Hampshire, 3000; Vermont, 2115; Mississippi, 1600.

It is estimated by American motor truck manufacturers that more than 125,000 trucks will be made during 1920.

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CANADA SHOWING ROAD BENEFIT BY MOVIES.

The department of public highways of the province of Ontario, Canada, is supplementing its good roads campaign by the use of the movies. A series of seven films has been prepared, designed to show the economic benefits derived from improved roads, which are being distributed broadcast throughout that province. In addition to these public highway films which have been released, the government is distributing others, pertaining to the related work of the department, including 70 agricultural films, four referring to public lands, forests and mines, and one to public works.

The department of agriculture has utilized its 47 district representatives—each of whom is furnished with a motion picture equipment complete to a storage battery for its own power when necessary—in presenting the pictures to the people nearly 2000 times, interspersed with reels of approved comedy drama, or travel by way of diversion. Other departments of the Ontario government are planning to use the films to a greater extent in educational work, and 30 new films on various subjects are now in course of preparation.

The motion picture enterprise of the Ontario government has proved an unqualified success, even though still in its infancy. Demands for the films come from all quarters, not only in Ontario and in distant provinces, but from the United States. Public entertainment houses take them eagerly. Schools, colleges, social organizations, both local and national, agricultural societies, etc., apply for them.

For example, Ontario films have been sent to the provincial highway board of Nova Scotia and the Community Motion Picture bureau, New York, for use in its military camps and its Khaki University oversea. Five portable machines, with 28 reels, covering 22 subjects, are already in use at the Canadian Khaki University, London, England. At the Canadian camp dinner in New York City one of the Ontario government films, featuring Algonquin park, Muskoka and Lake of Bays, was shown to an audience of nearly 600 guests.

Not only have Ontario government films been shown to over 200 organizations, farmers' clubs, women's institutes, dairy and horticultural associations, motor leagues, teachers' conventions, etc., but they were also prominent at fairs.

WISCONSIN BREAKS RECORD.

All previous records for motor vehicle registry in Wisconsin have been broken this year. The total number of licenses issued so far is more than 9500 in excess of estimates made on Jan. 1 last by the secretary of state. The number of truck licenses is 7240, of passenger cars 224,840 and dealers 1390, total of 233,470. In addition 10,675 motorcycles have been registered. An increase of more than 35 000 is indicated in passenger car registration compared with 1918. It is believed that not less than 5000 more cars will be licensed before the end of the year.

YOUR PART.

By P. L. Sniffin, International Motor Co.

Ten years ago, ten thousand trucks
Hauled goods from street to street;
Today five hundred thousand make
The nation's mighty fleet.
Increase at this velocity
In ten short years, would mean
Some twenty million motors
In our transportation scheme.

To make this a reality
Is up to you and I—
The past has proven that we can—
And figures never lie.
In the words of Teddy Roosevelt,
All men should feel they owe
Some time to their profession,
If they want to see it grow.

What part is yours to take and play
In this aggressive game?
It's in your power all the while
To give the truck more fame.
The maker, dealer, salesman, driver,
Owner of a fleet,
And everyone that transports goods
Will make success complete.

Reduce costs to a minimum—
Don't send out half a load—
Enlist the driver's firm support
And keep them on the road.
Cry out the slogan, "ship by truck,"
'Till every person sees,
That on hauls long and short
The truck has real economies.

But first and last and always,
These economies depend
Upon good roads, and without them
Development will end.
Do all you can to boost good roads,
And then put in your claim
To success that is bound to come
Because you play the game.
New York, N. Y., Nov. 11, 1919.

FREEMAN REPRESENTS BRAZIL.

The American Chamber of Commerce for Brazil has appointed Leslie E. Freeman as resident representative in the United States, with headquarters at 37 Liberty street, New York. The growing interest of American manufacturers, exporters and importers in Brazil has shown the necessity of that organization being represented in New York city in order that its advantages may be more available and its affairs properly promoted and it feels that its interests will be well looked after by Mr. Freeman.

WEST TENNESSEE HIGHWAYS.

Among the good roads projects under way in the western section of Tennessee are the following: Carroll county, on the Memphis to Bristol highway, and on the route to Reelfoot Lake, has arranged for $85,000, and the Gibson county court at Trenton, Tenn., has authorized the issue of $500,000 of road improvement bonds. This is one of the largest rural counties in the western part of the state, and is touched by the Meridian highway and Burlington road.

SAVE $1200 FIRST MONTH.

After one month's trial of two Pierce-Arrow five-ton trucks, the product of the Pierce-Arrow Motor Car Co., Buffalo, N. Y., the John Agar Co., meat packer of Chicago, states that a saving of $1200 was made over the former method of transportation by rented trucks. This record was so consistently maintained through succeeding months that in September the firm put into operation two more Pierce-Arrows, and a fifth has just been added.

These five trucks replace eight teams of horses and wipe out completely the rental bill formerly paid to outside truck owners. The trucks haul sides of beef from the packing plant to the Fulton market and shipping points, the average round trip being 12 miles. Three trips a day are made. Mileage is as high as 5.8 miles to a gallon of gasoline, and as many as 688 miles are traveled a month. In addition to the actual savings effected by the economical operation of the trucks, a further profit is made, as the speedy transportation reduces wastage, and the meat is in far better condition, thus reducing spoilage to a minimum.

USE OF ROAD FUNDS.

David Jameson, president of the American Automobile Association, advocates that all federal aid funds for the construction of roads should hereafter be expended only upon roads which are included in an inter-county system of main highways, despite the fact that the present road act does not require such use of the money.

This is becoming a fixed policy in many states, President Jameson points out, among them being Pennsylvania, Virginia, Ohio, Indiana, Illinois, Wyoming and Washington, which recently have practically decided to confine their federal money to roads that count in well defined state systems.

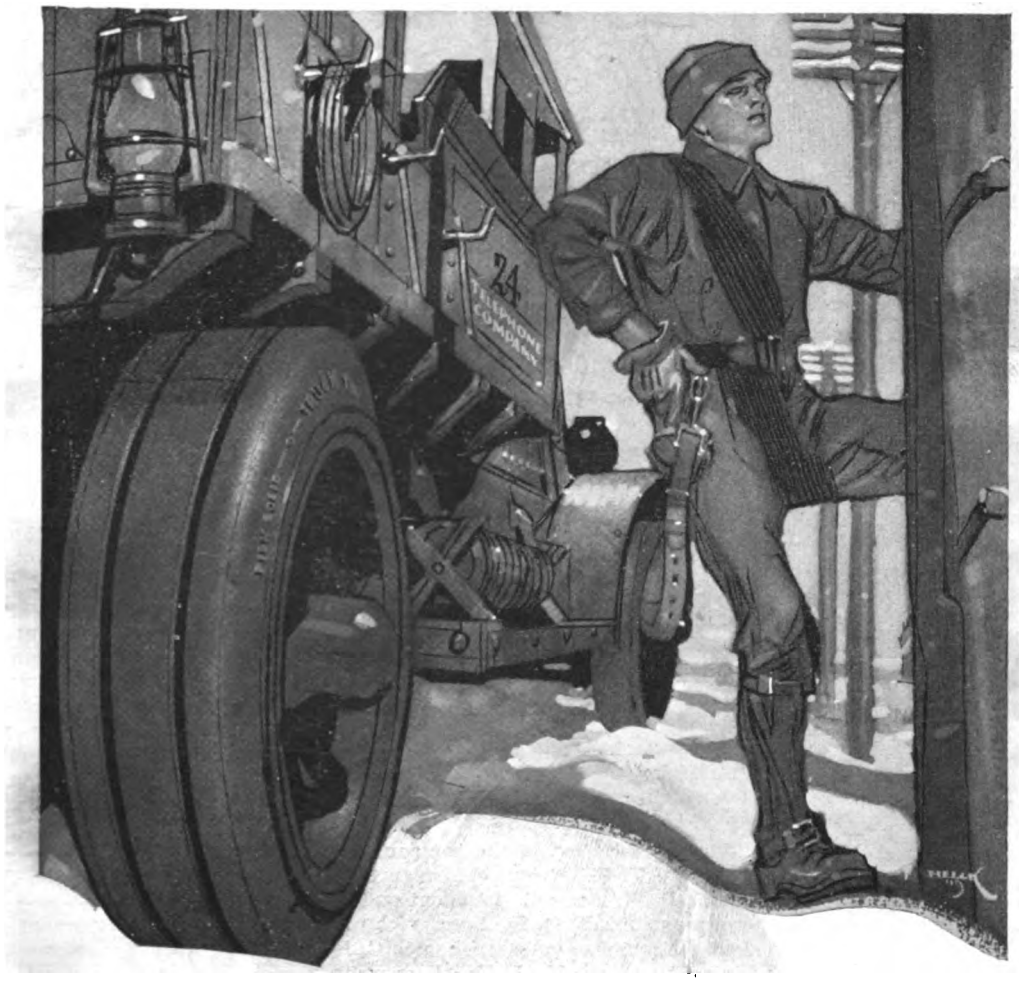
"If it is the correct thing, and we believe it is, for the wealthier and more settled states to give assistance through the federal treasury to the less populated and undeveloped parts of the country," Mr. Jameson adds, "this national cooperation carries with it an obligation to the state to function as a commonwealth in the form of inter-county roads built and maintained entirely at state expense."

ECONOMY OF MOTOR TRUCK.

"Every motor truck in operation is a blow to the high cost of living," says W. L. Kissel, secretary and treasurer of the Kissel Motor Car Co. "Every automobile that is used to increase personal efficiency is an enemy to procrastination. They decrease production cost by increasing rapidity of transportation. At the same time they increase production by economizing on time."

The annual "get-together day" of the Indiana Transfer & Warehousemen's Association will take place this year at the Indianapolis Chamber of Commerce, Nov. 29.

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The Lineman

"Call Anyone, Anytime, Anywhere"

Thus reads the invitation of the present-day telephone system, with its intricate network of communication lines from coast to coast.

IN maintaining this marvelous system, great responsibility devolves upon the lineman.

His service car must go speedily and surely; it cannot choose time, nor place, nor roads.

It is under such strains of service that dependable tires are most thoroughly tested, most appreciated. They cannot fail.

Fisk Solid Tires are the kind that can endure the hardships of the telephone service car. They are equal to every emergency—weather, bad roads, severe punishment. They are proving it every day, giving long service, uninterrupted usefulness.

That's because **Fisk Tires are** designed correctly and built faithfully to an ideal—



FISK IDEAL

"To be the best concern in the world to work for and the squarest in existence to do business with."

FISK F TRADE MARK

FISK TRUCK TIRES

SOLID and PNEUMATIC

(When Writing to Advertisers, Please Mention the MOTOR TRUCK.)

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BRONCHO PETE'S LAMENT.

By H. E. Jung, International Harvester Co.

The time has come, says Broncho Pete,
For me to hit the trail,
The Onward March of Progress
Is a treadin' on my tail.
For nigh to twenty years or more
I've freighted cross the range,
But Evolution's got me
And there's going to be a change.
Six Bronchos an' a Buckboard—
I was known from here to home;
As a gallopin' "Go-Getter"
What you'd better let alone.
Used to pack the pay from Laramie
To the mines at Copper Chip,
And my only Life Insurance
Was the "six-gun" on my hip.
When the Winter wind was howlin'
Down the coolie in a rage,
You could count on Broncho Pete, Sir—
An' the Powder River Stage.
But a feller from the city—
He was here the other day;
And he says unhitch your hosses,
Put the Buckboard plumb away.
They'd decided it was quicker—
Cheaper, easier—by far
To haul the freight from Laramie
In a blasted motor car.
Me—that's driven "Hell for Leather"
Down the Powder River Trail;
Me—they wants to run a truck, sir—
Why the thought it turns me pale.
Oh, I've seen a heap of rough stuff,
But you sure can bet your bean
I will never be a hostler
To a can of Gasoline.
Billings, Mont., Oct. 8, 1919.

SPECTACULAR SERVICE.

Rather than keep a Republic owner waiting and his truck in idleness, W. B. Rayburn, Grand Rapids, Mich., distributor in that city for the Republic Motor Truck Co., Alma, Mich., made a trip by airplane to the factory to secure needed parts that were temporarily out of stock at Grand Rapids.

The trip was made in a little over an hour and before a fast train could have made the run one way the dealer was back in Grand Rapids with the needed parts. In consequence, the Republic truck was again in service the same day, saving many valuable hours for its busy owner.

This is an example of the conscientious manner in which the Republic company is fulfilling its service policy.

WANTS SUPERVISION.

The competition of the motor truck with the railroads has become so great a factor in the South that recently B. Gilham, traffic manager of the Chamber of Commerce, Macon, Ga., appeared before the committee on agriculture of the National House of Representatives and asked that the trucks be placed under the supervision of the Interstate Commerce Commission. Mr. Gilham stated that trucks in his section were hauling freight at the rate of five cents a ton a mile.

Herschell-Spillman Plan $10,000,000 Production

North Tonawanda, N. Y., Nov. 12.—The Herschell-Spillman Motor Co., is expanding its plant here and planning largely increased production, statement being made that the aggregate value of the annual output of the works will eventually reach $10,000,000. The J. W. Cowper Co., Buffalo, contractor, will erect a four-story building of reinforced concrete and brick 70 by 160 feet in Marion street, and this will be completed before the end of the year.

The plant now produces 45 four-cylinder engines a day. The manufacturing plan comprehends an increase of the four-cylinder engines to 100 a day and to build 100 six-cylinders a day, or a total of 200. The company has or will discontinue the production of some types of four, six and eight-cylinder airplane engines (it has built the last for four years for the Curtiss company), and it will concentrate on two types, the four-cylinder units having cylinder bore of 3½ and stroke of five inches. and the six-cylinder units cylinder bore of 3¼ inches and stroke of five inches.

The organization of the company is as follows: T. J. Wilson, chairman of the board; R. W. Burtsell, president and general manager; E. O. Spillman, vice president and chief engineer; Thomas C. Perkins, treasurer; M. J. Tovell, secretary and assistant treasurer, and these officers and F. R. Switzer and Guy White directors. Of these, T. J. Wilson is a banker and lumber man of North Tonawanda; W. R. Burdsell was an executive of the Brown & Sharpe Manufacturing Co., Providence, and later with the Packard Motor Car Co.; Messrs. Perkins and Switzer are bankers, the latter being president of Hollister, White & Co., Boston.

TRANS-CONTINENTAL TOUR.

Harry Parmele, head of the field service department of the Atterbury Motor Car Co., Buffalo, N. Y., is on a three months' trans-continental service tour, which marks the beginning of a definite policy on the part of the Atterbury company to render efficient field service in the efficient operation of Atterbury trucks to both dealers and owners.

"Although the Atterbury Motor Car Co. has an enviable record for low cost of operation and freedom from trouble, it stands to reason that engineers with long training at the factory can give owners and dealers many pointers which will result in still lower operating costs and greater satisfaction."

Mr. Parmele is traveling by motor car and his itinerary includes Canton and Cleveland, O.; Chicago, Ill.; Milwaukee, Wis.; Kansas City, Mo.; Denver, Col.; Lusk, Wyo.; San Francisco and Los Angeles, Cal.; Portland, Ore., and Seattle, Wash.

PACKARD TRUCK'S RECORD RUN.

What is regarded as a new actual road motor truck speed record has just been established by a new model pneumatic tired Packard truck. The party making the trip, included factory executives and prominent distributors of the Packard Motor Car Co., Detroit, Mich. They made the run between Bay City and Detroit, a distance of 120.6 miles, in five hours and 52 minutes, an average of 20.6 miles an hour. The officials wished to acquaint themselves with actual problems to be met in freight transportation.

They left Bay City at 8:11 a. m. on the return trip, arrived in Flint, a distance of 55 miles, at 10.54 and finished at the Hotel Statler, Detroit, at 2:20. Three stops were made during the trip, consuming a total time of 17 minutes. Practically one-half of the distance was traveled over roads wet by recent rains. The truck was loaded practically to its capacity of three tons for the entire trip, carrying 18 passengers with their baggage and two 1000-pound weights.

The truck, which was especially designed and constructed to meet the growing demand for pneumatic tired freight carriers, was equipped with 38 by 7 Goodyear cord tires in front and 40 by 10 rear. The body was a 12 by 6 foot, 36-inch stake type.

FORD'S GASOLINE STREET CAR.

According to present plans, the internal combustion engine for Henry Ford's gasoline street car will soon be given a trial over the tracks of the Michigan Central railroad, as the preliminary test at the shops in Dearborn, Mich., was declared to be a complete success. The new type of car will leave ahead of the Wolverine Flyer, between Detroit and Chicago, and will race it for a time record, and in order to be successful will have to make 70 miles an hour.

The power unit which will move the car represents a new combination of functions. It is a motor, an air compressor, an electrical generator and a heating and lighting plant all in one. All operations necessary for the control of the car are centered in the motor. All this is accomplished, it is said, with a 75 per cent. reduction in weight, as compared with the power and control equipment of the ordinary electric car.

Mr. Ford has reiterated his recent offer to turn his invention over to the city of Detroit as a solution of existing transportation problems.

STRIKE OF BODY MAKERS.

A strike of 1200 members of the United Automobile, Aircraft and Vehicle Workers of America, has affected more than 100 makers of automobile bodies and carriage builders in New York. A 44-hour week and a wage increase averaging about 15 per cent. are demanded. Up to the present time the trouble has not spread beyond Manhattan. Here the body builders' and dealers' service stations are idle, about 80 per cent. of the shops of the body builders being affected.

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MOTOR TRUCK

THE NATIONAL AUTHORITY OF POWER HAULAGE

VOL. X. NO. 12. PAWTUCKET, R. I. DECEMBER, 1919.

WORLD'S GREATEST TRUCK SHOW AT NEW YORK

Industry to Be Represented by 70 Concerns in Exhibition at Mammoth Bronx Armory—Event Coincident with Transportation and Highway Development Meetings in Nation Wide Educational and Promotion Campaign

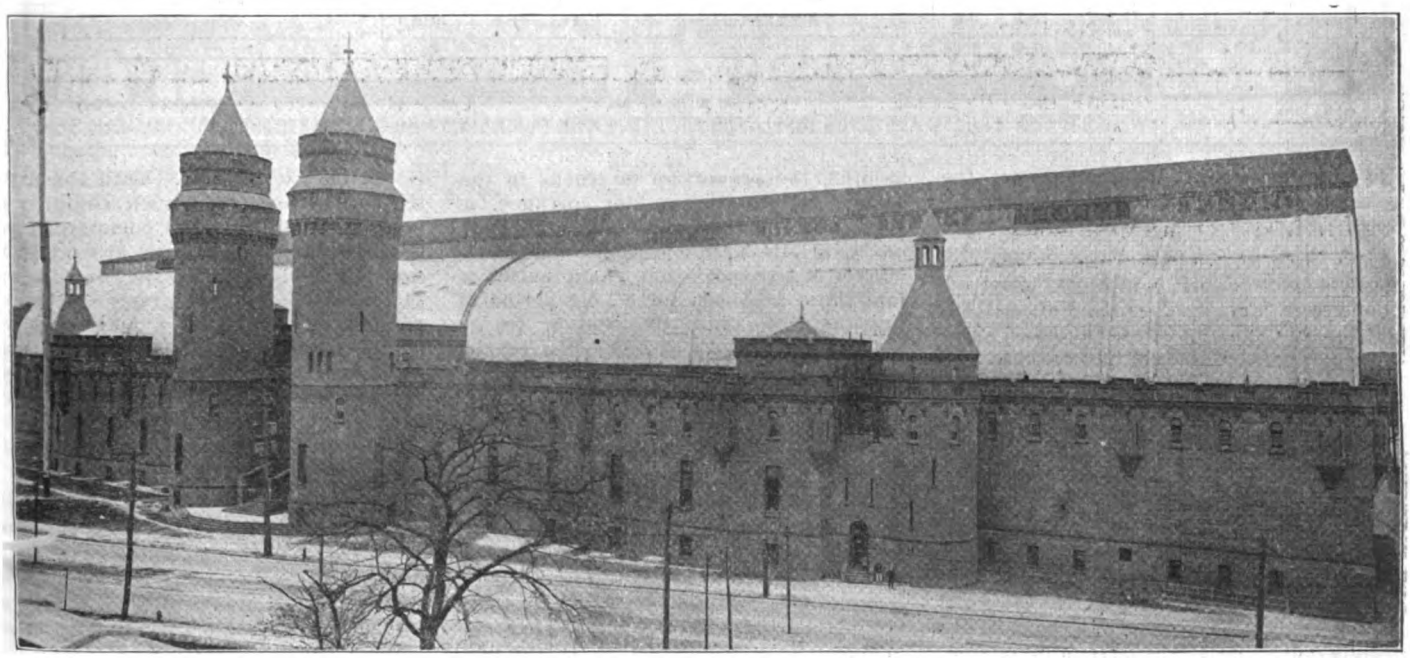
PROMOTION of the use of power vehicles for highway transportation on a scale never before attempted will be inaugurated with the opening of the truck division of the New York show of automobiles from Jan. 3 to 10 inclusive.

In addition to a display of machines there will be a series of meetings, one each afternoon and evening during the exhibition at which subjects generally relating to power vehicle haulage will be dealt with by speakers who are assumed to be authorities.

In other words, this promotion will be so organized that those who desire can obtain practical information of a great diversity of uses of machines which may be generally or specifically applied.

By this plan those who desire can so time their visits that they can attend any particular session and at the same time examine any vehicles of the sizes and types they are interested in.

The exhibition of trucks will, however, be apart from the passenger car show. As a matter of fact there will be practically two shows, each organized by the



Mammoth Armory of Eighth Coast Artillery at Jerome Avenue and Kingsbridge Road, the Bronx, 600 by 300 Feet, Where Approximately 300 Trucks and Chassis and Accessories Will Be Shown on One Floor, and the Big Transportation Conference Will Take Place.

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same interests and management, so widely separated by distance that there is little probability of any person attending both unless concerned in the two classes of exhibits.

Truck Show in Mammoth Armory.

The passenger car show will take place at the Grand Central Palace, at Lexington avenue and 46th street. The truck exhibition will be at the armory of the Eighth Coast Artillery at Jerome avenue and Kingsbridge road (194th street), well into the Bronx.

The plan of two shows will be something of an experiment, and to make the truck exhibition especially interesting the series of meetings for the discussion of transportation subjects has been arranged. This is expected to be especially attractive. While one cannot forecast what the attendance will be, and not until the conclusion of the truck show will there be sufficient knowledge on which to base judgment whether or not the plan of exhibition will be continued, the plan has much to commend it.

First N. A. C. C. Truck Show Since 1913.

This will be the first truck show organized in New York by the National Automobile Chamber of Commerce since 1913. After the 1913 exhibition there was no inclination on the part of the majority of the truck manufacturers to participate in shows. There were those who were anxious to engage in any legitimate promotion, who favored exhibitions, but preferred to unite with others of the industry because there was little reason to expect that they would be able to make sufficiently representative displays. Despite endeavors of these interests the National Automobile Chamber of Commerce disapproved proposals to have truck shows.

The policy of the show committee from the time separate exhibits of trucks were made was to have the passenger car display first, and promote this as the main exhibition, which necessitated the shows continuing two weeks in both New York and Chicago.

Early Shows Not Productive.

This plan was found by experience to be unproductive of results so far as the truck manufacturers were concerned, or at least of results that justified its continuance. The interest in trucks was not by any means as general as in cars. There was not a sufficient volume of business transacted, either by the manufacturers or their representatives, to justify the large expense. There was supposition that the conditions relative to sales of trucks were not at all comparable with sales of cars, and for this reason what would apply to the one would not apply to the other.

By this was meant that trucks are bought without regard to seasons, the sales being dependent upon the needs of the buyers. While it is true that construction work is not active during winter months, the proportion of trucks in the service of contractors, for instance, is very small; at least small when contrasted with the number used for other classes of transportation. As a matter of fact there has been for a long period of time quite as much demand for trucks for winter work as at any other season of the year.

Industry Not Agreed on Shows.

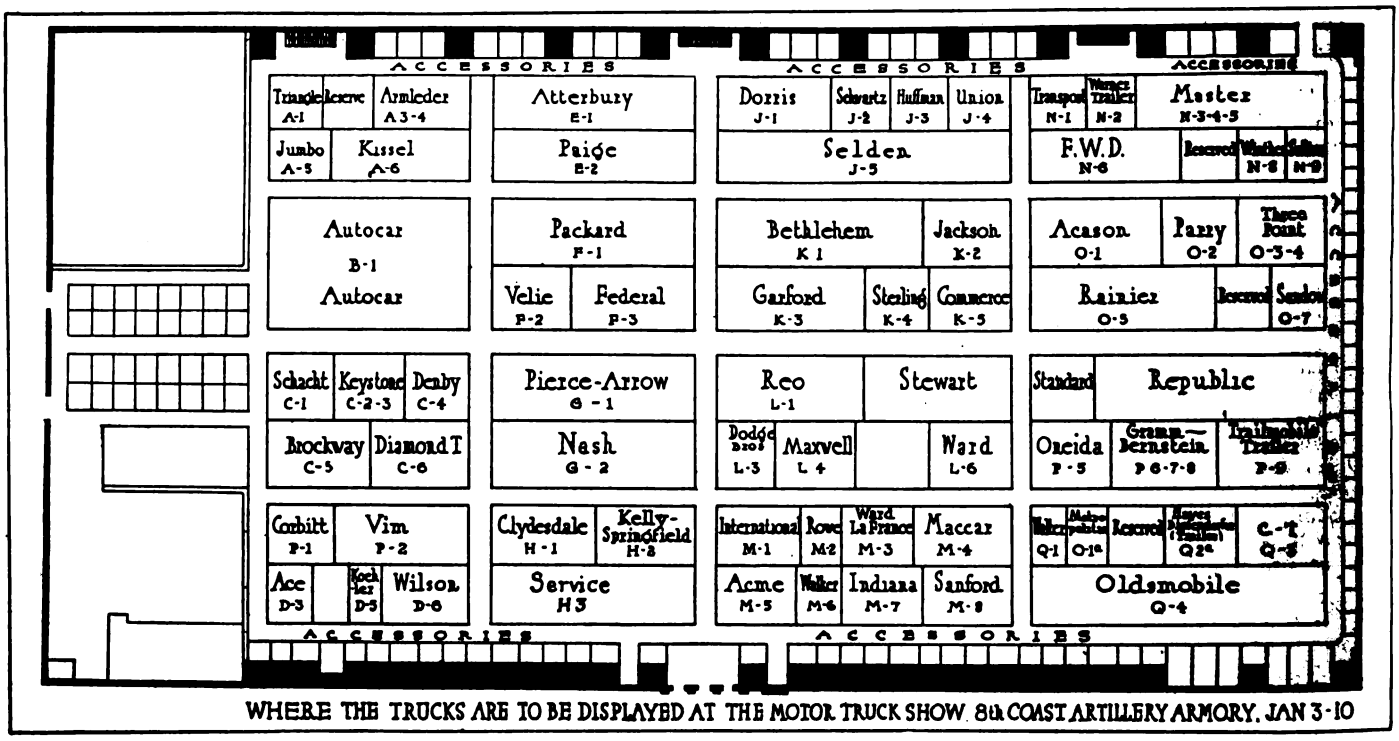
There was another factor that influenced the manufacturers probably more than any other, and this was that a considerable number of them produced both cars and trucks. The time required for production of special exhibits at the factories, the time of men diverted from regular duties in preparation for and in attendance at the shows, and the expense entailed by participation in exhibitions, meant retardation of operations and large additions to selling costs; the dealers directly in charge of exhibits found their organization disrupted prior to, during and after the shows and practically a month lost from what might be termed organization activities, which was not compensated by the volume of truck sales. The dealers believed that two shows in succession was a burden when only one could be regarded as productive.

Car shows were originally organized for the two principal commercial centers of the country to attract those who wanted to make agency contracts, to buy cars in numbers, and to adjust business conditions with reference to representation for the year in prospect, and show buying was incidental. But later, when distributor and dealer relations had been established show sales increased until today a considerable part of the visitors at car exhibitions are prospective buyers at least.

Buyers Few at Early Shows.

During the period when the truck shows succeeded the passenger car displays the buying of trucks was much different than it is today. Until the use of trucks had been given such a mighty impetus for industrial and commercial purposes, in addition to their utilization for army transport during the world's war, they were regarded largely as experimental. That is to say, many business men, who were satisfied with the practicality of automobiles as vehicles were not convinced that trucks were practical, or, if they were convinced, were doubtful of the economies claimed for them as applied to any specific work.

They were inclined to believe that the saving to be made by conversion of animal transportation equipment to power vehicles did not justify the expense entailed by a change; they wanted to experiment with makes, types and capacities of trucks to learn what would best serve them; they wanted to acquire machines in whatever ratio would maintain their services as animals and vehicles became unservicable, or they believed themselves justified in waiting until



WHERE THE TRUCKS ARE TO BE DISPLAYED AT THE MOTOR TRUCK SHOW. 8th COAST ARTILLERY ARMORY, JAN 3-10

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trucks had been developed further or conditions were more favorable from their points of view.

Industry Depressed Before War.

What has been stated no doubt represented the attitude of a very large proportion of business men. As a matter of fact during 1913 and until the declaration of war in 1914 the truck industry suffered a considerable depression. Not until the European governments began purchasing trucks in 1914 was there relief from this condition, and then machines were indispensable for army transport simply from their greater mobility.

The utility of trucks for army service was well established when the United States made declaration of war, but the practicality and economy of power haulage was not realized until the government mobilized its resources and machine transportation was resorted to for relief of railroad congestion. The progress made by the truck industry during the war was marvelous. What had been believed theory was proven. The industry made progression in comparatively short time that would not have been made in a decade of normal conditions.

Last Year's Shows Organized by Dealers.

It was the condition of the automotive industry resultant from conversion to war work that impelled the manufacturers as represented by the National Automobile Chamber of Commerce to disapprove shows a year ago, but the dealers, who believed that stimulation of automobile buying was necessary, decided to organize them on their own responsibility. Those who are intimate with the conditions of the industry and trade will admit that had no shows been held the demand would have absorbed a much larger number of cars than the factories produced. But the dealers' organization by their own promotion brought to the attention of the people the machines they represented, and they were successful from every point of view.

The truck shows of last year in New York and Chicago were organized because the passenger car dealers sought the cooperation of the entire trade owing to the uncertainty of attendance and buying, and the truck dealers believed that whatever promotion they could them-



Alfred Reeves, General Manager, National Automobile Chamber of Commerce.

selves engage in was good business. In other words, the prevailing opinion generally was that a considerable period of industrial and commercial reconstruction and readjustment was in prospect, and stimulus was wise if not necessary. In any event it appeared to be an insurance against uncertainty that could well be engaged in.



Col. Charles Clifton, President of the National Automobile Chamber of Commerce.

Truck Industry Never so Strong.

The power truck industry was never so strong as it is today with reference to number of concerns engaged in it, in capital invested, in volume of production, in business transacted, and the demand for vehicles is greater than ever known. It has made wonderful growth and progress from every point of view. There are today more manufacturers than were ever at any one time building trucks, and yet one may emphasize that this development has been largely evolution, for there are very few concerns building trucks today that were active in the industry a decade ago.

The truck industry is now producing several types that may be accepted as general or conventional designs. Engineering has concentrated on these designs. This has been due in no small degree to the influence of the parts and construction unit specialists who standardize their products, and through standardization and production volume have made practical the building of vehicles that are judged by buyers from their general knowledge of these parts and units.

Concentration on General Design.

Acceptance of design that is known to be mechanically practical, and building with what is regarded as having quality, has established trucks at parity with cars in the opinion of buyers. By this is meant that a purchaser can be confident that he will have a vehicle that will be reasonably good value for the price, and that its economies will be dependent entirely upon the uses made of it.

One should not assume that this is an argument that all trucks are alike in quality, but the statement is made to emphasize that if a buyer purchases with reference to individual uses the economies will be in ratio to his own adaptations and his own judgment.

The New York show will be an innovation in power truck selling in that the exhibitors will make display, but the management will undertake to educate all interested in the economic uses of trucks. It has planned to benefit business men generally by directing their attention to a very wide range of transportation subjects, which will be presented by men who are regarded as authorities, and who will submit ideas resultant from study of transportation needs, with suggestions how these have been or may be applied.

Promotion by Conference Meetings.

The educational meetings have been carefully planned and will be both afternoon and evening for the convenience of visitors whose time may be limited. The visitors to the show will have opportunity of attending these and widespread publicity has been given, so that there will be as large a measure of practical benefit as is possible to obtain.

If there is any condition that will limit the attendance at the truck show it will be the location of the exhibition building, which is at Jerome avenue and Kingsbridge road, and yet this is extremely accessible. The reason for this choice is that it is the only structure in New York City in which so large an exhibition can be staged. The structure itself is 600 by 300 feet, and on one floor will be shown approximately 75 different exhibits, of which about 70 will be trucks, three trailers and two bodies, and in addition to this there will be a considerable display of accessories.

Will Be Largest Show of Trucks.

The show of trucks will be the largest number of makes ever seen in one exhibition in America, and each individual display will probably include the complete series built by each exhibitor. Considering the exhibits separately they may be one or more of each type built, or where but one or two sizes are produced the display may be several chassis of one or two load ratings.

There is no way of forecasting the precise number that any exhibitor will show, but there is reason to believe that the exhibition will be close to 300 different chassis, and this may be said to be considerably more than half the number built by the industry. This statement ought to emphasize the magnitude of the show.



Samuel A. Miles, Manager of National Automobile Chamber of Commerce.

There is no question that the exhibitors will all show designs that will be regarded as the best they have produced. All will emphasize the quality of product as

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measured by the standards best known, but there is little probability that there will be what can be considered as variance from conventional practise. To the contrary, there is reason to believe that the manufacturers will emphasize that they have adhered to what has been established to be sound engineering, but so far as possible have improved details of construction.

Care Given to Construction Detail.

Without question the new machines will be exceedingly interesting mechanically, and the engineers can point out detail after detail where improvement has been made. This, however, will not mean that the trucks of other design, built previously, if you please, are to be discredited, but it will evidence to what extent study has been given to every unit and part with the object of insuring endurance and operating economy and minimizing the labor necessary to keep them operative.

And these details are extremely important—more important than the average interested truck buyer will realize. First of all truck building may be said to be to general or accepted design. By this is meant that one may take a large number of chassis of different makes and from study learn that in general principles of construction they are much the same. It is not at all probable that the man who assumes he knows truck design well will be able to determine the identity of more than a small number of such a series of machines were they in line without the manufacturers' trade marks or design. In other words, identity is established by form of radiator or hood, by a distinctive dash, by an unusual seat or some other unit that is relatively of small importance so far as form or appearance is concerned, rather than by the peculiarity of mechanical design.

Value of Detail Improvement.

But were one to note the details of construction the variance would be found

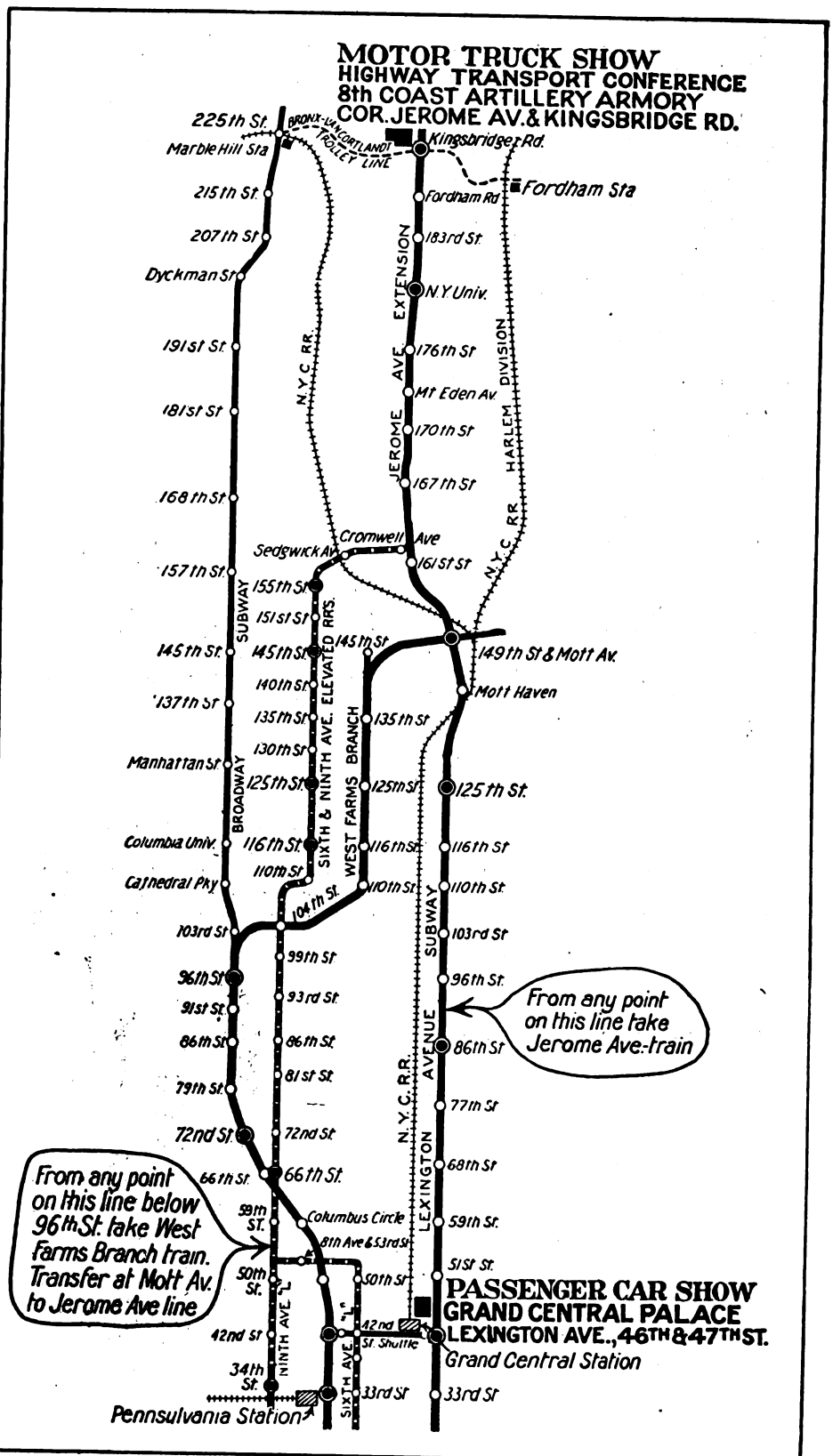


Diagram Showing the Rapid Transit Service Between the Grand Central Palace and the Manhattan Railroad Terminals and the Eighth Coast Artillery, Where the Truck Show Will Take Place.

To Go to Truck Show

FROM
Grand Central Palace
Grand Central Station
Biltmore Hotel
Belmont Hotel
Commodore Hotel
Manhattan Hotel
Murray Hill Hotel
Ritz-Carlton Hotel

TAKE
Lexington Avenue Subway Marked Jerome Avenue. Entrances Are on Lexington Avenue, Immediately South of 43rd Street and Immediately North of 42nd Street. Time About 30 Minutes.

FROM
Pennsylvania Station
Pennsylvania Hotel
McAlpin Hotel
Imperial Hotel
Waldorf-Astoria

TAKE
Sixth Avenue Elevated at 33rd Street. Time About 40 Minutes.

FROM
Astor Hotel
Claridge Hotel
Knickerbocker Hotel

TAKE
Sixth Avenue Elevated at 42nd Street, or Broadway-Seventh Avenue Subway at Times Square. Take Subway Train Market West Farms and Change at Mott Avenue to Jerome Avenue Line.

FROM
Any Point Between Fifth Avenue and the East River

TAKE
Nearest Station on Lexington Avenue Subway, Which, South of 42nd Street, Runs Under Fourth Avenue. Take or Change to Express Marked Jerome Avenue.

FROM
All Points on the West Side

TAKE
Sixth or Ninth Avenue Elevated, or Broadway-Seventh Avenue Subway. Take Subway Train Marked West Farms and Change at Mott Avenue to Jerome Avenue Line.

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and each detail would have, from the viewpoint of the designer, some value that would justify it, and which, after explanation, would be understood by the observer. Some machines have been built practically to the same design for years. The claim made for these is that unusual care was taken in the original engineering and service has proven that there is no reason for change.

The concerns that have entered the industry comparatively recently have engineering that has been established by experience and the designs may be said to have the same relative value as those that have been developed by service. The object of the designers has been to reject all that has been found unsatisfactory and to improve upon whatever had been previously produced, or to profit by the experience of other manufacturers.

Body Types of Great Interest.

What will be quite as interesting as the chassis—in fact more interesting to those who are studying transportation equipment and its possibilities if utilized in specific work or unusual conditions—will be the bodies, for engineering has been quite as much directed toward the construction of types that will be greater utilities than those intended for general work.

Truck body design may be believed to be a detail with those who have not given careful study to vehicle haulage, but there is no question that the economies obtainable with equipment designed for special use is a very wise investment, and will undoubtedly result in saving of time or labor or both. For this reason many of the manufacturers have made careful investigation of body types, that their sales organization may be better able to deal with each individual requirement.

Body specialists have engaged in scientific study of construction with reference to varying works. They have experimented carefully and made comparisons of service to determine the particular advantages of differing designs, and those who have consulted with experts have had equipment designed and constructed that is adapted for but one use, but for the service intended has much to recommend it.

Special Types a Show Feature.

The truck manufacturers who will make exhibits at the show have in many instances equipped the chassis to be displayed with specimen bodies, or will have included in their displays machines that have bodies built specially for customers that may be referred to as exhibition loans. That is, the trucks have been delivered but the purchasers will allow them to be shown to favor the dealers or manufacturers or for the individual advertising that will obtain to them. Naturally, many of the latest productions, which will include a considerable number designed for the use within New York City and its suburbs, will be included in the display.

This exhibition of bodies will have quite as much interest for the manufacturers and their sales representatives as for those who contemplate buying trucks, and the truck owner who cares to devote himself to study of equipment will be able to obtain a liberal education of the possibilities with reference to design and construction, and with the information obtainable should be able to better equip and more economically use such vehicles as he may purchase.

Each Visitor Can Judge Body Values.

The main proposition that each owner must determine is whether or not he can use trucks economically in whatever haulage he has to do. The show will afford him opportunity for obtaining both mechanical and service information from the displays, and the series of meetings through lectures, moving pictures and other screen illustrations and discussions will benefit him to whatever degree he may desire to participate in them.

There will be no elaborate decoration of the mammoth armory, but it will be well lighted and the stands of the exhibitors will be clearly established and each will be designated so that it may be located. Diagrams of the floor space with each exhibit specifically identified, and printed information showing how the exhibition building can be reached from the Grand Central and Pennsylvania railroad terminals, from the Grand Central Palace and from other well known centers of the city have been prepared and will be obtainable at practically all of the hotels, the offices of the National Automobile Chamber of Commerce and the Motor and Accessory Manufacturers' association, the Grand Central Palace and at nearly all of the power vehicle and automotive accessory dealers' places of business, as well as the offices of the other trade associations.

Show Will Be Easily Accessible.

With this information any person a stranger in New York City ought to be able to reach the show directly. The subway and elevated railroad trains and the surface cars and the different special truck, passenger car and omnibus services will be available. Several of the concerns that will exhibit cars at the Grand Central Palace and trucks at the armory will operate private services between the two buildings, but these will be available only at invitation and will not be for the public generally.

Following the usual custom both shows will be opened Saturday evening, Jan. 3, and they will continue through the next week, being concluded Jan. 10. The hours will be from 10 in the morning until 11 in the evening.

HIGHWAY TRANSPORT CONFERENCE

TRANSPORT Conference is the name applied by the show management to the series of meetings that is to be held afternoon and evening during the exhibition for the general promotion of haulage by power vehicle.

This series has been planned for two reasons. The first is to attract to the truck show those who might not be sufficiently interested in the vehicles alone to make the special trip necessary to reach it, either from the passenger car exhibition or from any other part of the city. The second is to engage in special promotion of transportation by power vehicle at a time when there would be the largest local interest in the subject, and when there would be in the city thousands of persons who were more or less concerned in highway haulage propoganda.

But the conference should not be regarded as a novelty or an event that is simply a show adjunct—that is, to put it plainly, a clever advertising stunt. To the contrary, the power truck industry and trade has realized that the potential market for vehicles is very large, that this applies to the world as a whole rather than to this country alone, and that the utilization of trucks depends in large measure upon the realization of the people of their practical economies.

Promotion by Entire Industry.

The knowledge that will convince the public will be best disseminated by a general campaign of education engaged in by the industry as a whole, rather than in the individual promotion of different concerns, perhaps each in ratio to its resources and in the localities in which it operates, for, no matter how well organized each concern's endeavor, policies would differ and with a diversity of objectives the results would be small as compared with those obtaining from a single, comprehensive campaign in which all interests were united.

The national demonstrating tour through six northwestern states organized by the National Association of Motor Truck Sales Managers, in which competition was eliminated and all concerns represented engaged in general promotion for sale of trucks to farmers, established very clearly that the industry could collectively engage in promotive work with a large measure of returns for each interest.

Widespread Interest in Highways.

The promotion undertaken by the National Automobile Chamber of Commerce and by different interests, in the form of publicity and meetings, has proven conclusively that there is widespread interest in highway transportation, and that the subject is one of the most important of all in the public mind. In view of the great movement for national, state and municipal road building, the enormous sums already available for highway construction and the keen realization of the inadequacy of existing railroads, no more opportune time could be determined for such an event as the conference now organized.

The initiative may be said to be that of the National Automobile Chamber of Commerce, for there will be a similar conference at Chicago in connection with the show of trucks in that city. There is

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probability that the conferences will be continued, but on smaller scale, at a number of the other large shows during the winter.

At the conference the interest will be enhanced by illustrations, both motion pictures and stereopticon slides, dealing with the specific subjects, and in addition there will be motion pictures of power vehicle service.

Prominent Speakers at Openings.

The opening session of the conference will take place in an auditorium in the armory that will seat approximately 1000 persons the evening of Jan. 3, and invitations to speak at this have been extended to members of the President's cabinet, governors of states and United States senators, several of whom have accepted. The purpose is to make the occasion as important as possible and to establish in the minds of the people the real value of the conference.

The speakers who will take part in the conference include S. M. Williams, chairman of the Federal Highway Council (which body has taken up a part of the work inaugurated by the Highways Transport Committee of the Council of National Defense); J. E. Pennypacker, George C. Diehl, chairman of the Good Roads Committee of the American Automobile Association; Pyke Johnson, secretary of the highways committee of the National Automobile Chamber of Commerce; Robert C. Hargreaves, Goodrich Tire & Rubber Co., formerly secretary of the Highways Transport Committee; Harry S. Quine, Goodyear Tire & Rubber Co.; M. O. Eldridge, director of good roads, American Automobile Association; F. C. Thompson, highway engineer, New Jersey state highway department; Arthur H. Blanchard, professor of highway transport and highway engineering, University of Michigan, and president of the National Highway Traffic association, all of whom will present subjects dealing with or related to highway engineering and highway transportation.

Speakers on Transportation Subjects.

Thomas Snyder, secretary of the highways transport division of the Indianapolis Chamber of Commerce; Prof. Doyle of Cornell University; J. H. Eggleston, chairman of the Iowa highways transport committee; F. W. Fenn, secretary of the Motor Truck Committee of the National Automobile Chamber of Commerce; E. E. Peake, secretary of the Kansas City Motor Car Dealers' association; George D. Wilcox, sales manager for the Commerce Motor Car Co., Detroit, and E. A. Williams of the Garford Motor Truck Co., Lima, O., will present papers on rural motor expressing, intercity truck haulage and general phases of truck service.

The use of trucks to obtain the greatest economy will be considered in addresses to be made by Walter M. Ladd, service manager for the Pierce-Arrow Motor Car Co., Buffalo, N. Y.; E. E. LeSchum, general superintendent for the American Railway Express Co., New York City; H. E. Merithew and H. W. Drew, the former a transportation expert and the latter an engineer of the technical service engineering department of

EXHIBITORS AT THE TRUCK SHOW

Trade Name	Manufacturer	Address
Acason	Acason Motor Truck Co.	Detroit, Mich.
Acme	Acme Motor Truck Co.	Cadillac, Mich.
Ace	American Motor Truck Co.	Newark, O.
Armleder	O. Armleder Co.	Cincinnati, O.
Atterbury	Atterbury Motor Car Co.	Buffalo, N. Y.
Autocar	Autocar Co.	Philadelphia, Pa.
Bethlehem	Bethlehem Motors Corp.	Allentown, Pa.
Brockway	Brockway Motor Truck Co.	Cortland, N. Y.
Clydesdale	Clydesdale Motor Truck Co.	Clyde, O.
Commerce	Commerce Motor Truck Co.	Detroit, Mich.
Corbitt	Corbitt Motor Truck Co.	Henderson, N. C.
C. T.	Commercial Truck Co. of America	Philadelphia, Pa.
Defiance	Turnbull Motor Truck & Wagon Co.	Defiance, O.
Denby	Denby Motor Truck Co.	Detroit, Mich.
Diamond T	Diamond T Motor Truck Co.	Chicago, Ill.
Dodge	Dodge Brothers	Detroit, Mich.
Dorris	Dorris Motor Car Co.	St. Louis, Mo.
Federal	Federal Motor Truck Co.	Detroit, Mich.
	Four Wheel Drive Motor Truck Co.	Webberville, Mich.
Fulton	Fulton Motor Truck Co.	Farmingdale, N. Y.
Garford	Garford Motor Truck Co.	Lima, O.
Graham	Graham Brothers	Evansville, Ind.
Gramm-Bernstein	Gramm-Bernstein Motor Truck Co.	Lima, O.
Huffman	Huffman Bros. Motor Co.	Elkhart, Ind.
Hurlburt	Hurlburt Motors, Inc.	New York, N. Y.
Indiana	Indiana Truck Corp.	Marion, Ind.
International	International Harvester Corp.	Chicago, Ill.
Jackson	Jackson Automobile Co.	Jackson, Mich.
Jumbo	Nelson Motor Truck Co.	Saginaw, Mich.
Kelly-Springfield	Kelly-Springfield Motor Truck Co.	Springfield, O.
Keystone	Commercial Car Unit Co.	Philadelphia, Pa.
Kissel	Kissel Motor Car Co.	Hartford, Wis.
Koehler	H. J. Koehler Motors Corp.	Newark, N. J.
Maccar	Maccar Truck Co.	Scranton, Pa.
Master	Master Trucks, Inc.	Chicago, Ill.
Maxwell	Maxwell Motor Co.	Detroit, Mich.
Nash	Nash Motors Co.	Kenosha, Wis.
Oldsmobile	Olds Motor Works	Lansing, Mich.
Oneida	Oneida Motor Truck Co.	Green Bay, Mich.
Packard	Packard Motor Car Co.	Detroit, Mich.
Paige	Paige-Detroit Motor Car Co.	Detroit, Mich.
Pierce-Arrow	Pierce-Arrow Motor Car Co.	Buffalo, N. Y.
Rainier	Rainier Motor Corp.	New York, N. Y.
Reo	Reo Motor Car Co.	Lansing, Mich.
Republic	Republic Motor Truck Co.	Alma, Mich.
Rowe	Rowe Motor Mfg. Co.	Lancaster, Pa
Sandow	Sandow Motor Truck Co.	Chicago, Ill.
Sanford	Sanford Motor Truck Co.	Syracuse, N Y.
Schacht	G. A. Schacht Motor Truck Co.	Cincinnati, O.
Schwartz	Schwartz Motor Truck Co.	Reading, Pa.
Selden	Selden Truck Corp.	Rochester, N. Y.
Standard	Standard Motor Truck Co.	Detroit, Mich.
Sterling	Sterling Motor Truck Co.	Milwaukee, Wis.
Stewart	Stewart Motor Corp.	Buffalo, N. Y.
Sullivan	Sullivan Motor Truck Corp.	Rochester, N. Y.
Transport	Transport Truck Co.	Mt. Pleasant, Mich.
Three Point	Three Point Truck Co.	Newark, N. J.
Triangle	Triangle Motor Truck Co.	St. Johns, Mich.
Union	Union Motor Truck Co.	Bay City, Mich.

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Velie	Velie Motors Corp.	Moline, Ill.
Vim	Vim Motor Truck Co.	Philadelphia, Pa.
Walker	Walker Vehicle Co.	Chicago, Ill.
Walter	Walter Motor Truck Co.	New York, N. Y.
Ward	Ward Motor Vehicle Co.	Mt. Vernon, N. Y.
Ward LaFrance	Ward LaFrance Motor Truck Co., Inc.	Elmira, N. Y.
Wilson	J. C. Wilson Co.	Detroit, Mich.
Winther	Winther Motor Truck Co.	Kenosha, Wis.
	TRAILER EXHIBITS.	
Highway	Highway Trailer Co.	Edgerton, Wis.
Trailmobile	Trailmobile Co.	Cincinnati, O.
Warner	Warner Manufacturing Co.	Beloit, Wis.
	BODY EXHIBITS.	
Metropolitan	Metropolitan Body Co.	Bridgeport, Conn.
Martin-Parry	Martin-Parry Corp.	Indianapolis, Ind.

the Packard Motor Car Co., Detroit; Ralph C. Rognon, president of the Automobile Service Association of New York City; George W. Veale of the Timken-Detroit Axle Co., Detroit; Walter Wadrop, editor of Power Wagon, Chicago; Joseph Husson, editor of Commercial Vehicle, New York City; W. P. Kennedy, transportation engineer, New York City; George H. Pride, president of the Heavy Haulage Co., New York City, former member of the Highways Transport Committee; Roderick Stephens of Stephens Fuel Co., New York City, and W. J. L. Banhem, general traffic manager for the Otis Elevator Co., Yonkers, N. Y.

The Market Among the Farmers.

Senator Capper of Kansas, A. H. Kroh of the Goodyear Tire & Rubber Co., E. T. Meredith, publishers of Successful Farming, and Raymond Olney, editor of Power Farming, will discuss the utility of power trucks in agricultural operations and country haulage.

Among other speakers will be F. W. A. Vesper, president of the National Automobile Dealers' association, St. Louis, Mo.; Robert O. Patten, truck sales manager for the Pierce-Arrow Motor Car Co., Buffalo, N. Y.; J. W. Allen, branch manager at New York City for the Service Motor Truck Co., Wabash, Ind.; D. C. Fenner of the International Motor Co., Ray W. Sherman, editor of Motor World, whose subjects will be more general.

Legisation and legal subjects will be taken up by Charles T. Terry, counsel for the American Automobile Association, National Automobile Chamber of Commerce and Automobile Club of America; Charles H. Bond, counsel for the Motor Truck Association of America; Harry Meixell, Jr., secretary of the legislative committee of the National Automobile Chamber of Commerce, and F. H. Ertsman, executive secretary for the Motor Truck Owners' association.

As has been stated the speakers the first meeting of the conference will be men of prominence, who will deal with highways and power vehicle transportation from varying aspects.

The afternoon session will have subjects that will directly concern those engaged in the industry and trade, the distributors, dealers and especially service. The evening meetings will be for the benefit of those engaged in truck transportation, owners and shippers and will cover different phases of use with reference to time and labor economies.

The subjects to be considered at the New York show will include the following:

Afternoons at 2:15.

Jan. 5—
- "Merchandising Motor Trucks."
- "The Trade Segregation Plan."
- "Effective Advertising."
- "The Farm Field."

Jan. 6—
- "Smoothing the Path of the Motor Trucks."
- "Working for Highway Improvement."
- "Taking an Interest in Legislation."
- "The Automobile Legislative Council."

Jan. 7—
- "Selling on the Firing Line."
- "Proven Sales Plans."
- "Developing Prospects."
- "Promoting Rural Motor Express and Other Enterprises."

Jan. 8—
- "In the Matter of Service."
- "The Truck Owner's Viewpoint."
- "The Truck Dealer's Plan."
- "The Manufacturer's Policy."

Jan. 9—
- "Selling Motor Transportation."
- "Handling Motor Trucks and Passenger Cars Together."
- "Offering a Complete Transportation Line."

Evenings at 8:15.

Jan. 5—
- "Motor Vehicles in Passenger Transportation."
- "Replacing Street Cars with Motor 'Buses."
- "Motorbus Operation."

Jan. 6—
- "Increasing Motor Haulage Efficiency."
- "Cost Accounting, Routing and Dispatching."
- "Loading and Unloading Devices."
- "Incentive for Drivers and Helpers."

Jan. 7—
- "Rural Motor Express."
- "Its Opportunities as an Investment and Business Career."
- "Its Advantage to the Shipper."
- "Its Benefits to the Producer and Consumer."

Jan. 8—
- "Aids to Motor Truck Efficiency."
- "Trailers."
- "Pneumatic Tires."

Jan. 9—
- "Motor Truck and Railroad Freighting."
- "Cost Range and Service Comparisons."
- "Connecting Farms and Markets."

Jan. 10—
- "Highways and Motor Transport."
- "Relations of Roads to Operating Cost."
- "Progress of Highway Improvement."
- "Constructing Roads for Motor Truck Traffic."

One will note that the closing day there will be a single joint session in the afternoon. At all other times the meetings will be for the benefit of distinct interests.

The meetings will be planned to continue approximately an hour and 15 minutes each, but they will be followed by shows of pictures that will require at least a half hour more. The motion pictures to be shown have been collected by Dr. Francis Holley, director of the Bureau of Commercial Economies at Washington, and these will include all phases of transportation and will prove to be extremely interesting.

EXHIBITORS OF ACCESSORIES

The exhibit of parts, construction units, accessories, supplies and equipment that will be made at the truck show will be small as compared with that in connection with the passenger car exhibition, but it will be of sufficient proportions to justify special attention, and it will be the most comprehensive display of the kind ever made at a power truck exposition.

The stands will be on both sides and one end of the big floor and the aisle that will encircle the building and which will afford the same opportunity for display for each exhibitor will be approximately a quarter mile long. The spaces will number about 80, but there is possibility of changes with reference to these. Already more than 65 have been contracted for and there is probability that all will be occupied when the big show is opened to the public.

The exhibitors at the show include the following:

Af-Ford-Able Sales Co. of New York, Inc.	New York N. Y.	Buda Co.	Harvey, Ill.
Aluminum Bronze Solder Co.	Philadelphia, Pa.	Byrne, Kingston & Co.	Kokomo, Ind.
Aluminum Die Castings Co.	Cleveland, O.		
American Auto Digest	Cincinnati, O.	Challoner Co.	Oshkosh, Wis.
American Bosch Magneto Corp.	Springfield, Mass.	Chilton Co.	Philadelphia, Pa.
American Chain Co.	Bridgeport, Conn.	Clark Equipment Co.	Buchanan, Mich.
American Machine Co.	Newark, Del.	Class Journal Co.	New York, N. Y.
American Taximeter Co.	New York, N. Y.	Commercial Investment Trust	New York, N. Y.
Apollo Magneto Corp.	Kingston, N. Y.	Continental Motors Corp.	Detroit, Mich.
Arrow Grip Mfg. Co.	Glens Falls, N. Y.	Continental Auto Parts Co.	Columbus, Ind.
Automobile Journal Publishing Co.	Pawtucket, R. I.		
		Dayton Steel Foundry Co.	Dayton, O.
Bausch Machine Tool Co.	Springfield, Mass.	Jos. Dixon Crucible Co.	Jersey City, N. J.
Bedker Brothers	Chicago, Ill.	Duplex Engine Governor Co.	Brooklyn, N. Y.

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Eastern Machine Co.	Easton, Mass.
Eisemann Magneto Co.	Brooklyn, N. Y.
Empire Axle Co.	Dunkirk, N. Y.
Flint Motor Axle Co.	Flint, Mich.
Franklin Machine & Tool Co.	Springfield, Mass.
Gray & Davis, Inc.	Boston, Mass.
Hercules Motor Mfg. Co.	Canton, O.
Hero Manufacturing Co.	Philadelphia, Pa.
Horizontal Hydraulic Hoist Co.	Milwaukee, Wis.
Houpert Machine Co.	L. Island City, N. Y.
Hudson Motor Specialties Co.	Philadelphia, Pa.,
Humil Corp.	New York, N. Y.
Iron City Products Co.	Pittsburgh, Pa.
Jaxon Steel Products Co.	Jackson, Mich.
Lauraine Magneto Co.	New York, N. Y.
Lobes Body Co., Inc.	Mt. Vernon, N. Y.
Martin-Parry Corp.	Indianapolis, Ind.
Motor & Accessory Manufacturers Assn.	New York, N. Y.
Mead-Morrison Mfg. Co.	East Boston, Mass.
Merchant & Evans Co.	Philadelphia, Pa.
Minneapolis Steel & Machinery Co.	Minneapolis, Minn.
Motor Compressor Co.	Newark, N. J.
Pantasote Co.	New York, N. Y.
Parker Axle & Products Corp.	New York, N. Y.
Power Farming Press	St. Josephs, Mich.
Robertson Cradlelock Wheel Co.	Chicago, Ill.
Russel Motor Axle Co.	Detroit, Mich.
Schraeders Sons, Inc., A.	Brooklyn, N. Y.
Service Engineering Co.	New York, N. Y.
Sewell Cushior Wheel Co.	Detroit, Mich.
Snead & Co. Iron Works, Inc.	Jersey City, N. J.
Splitdorf Electrical Co.	Newark, N. J.
Standard Steel Castings Co.	Cleveland, O.
Stromberg Motor Devices Co.	Chicago, Ill.
Torbensen Axle Co.	Cleveland, O.
U. S. Specialty Co.	Boston, Mass.
Vacuum Oil Co.	New York, N. Y.
Vaporizer Utilities Sales Corp.	New York, N. Y.
Wellman-Seaver-Morgan Co.	Cleveland, O.
West Steel Casting Co.	Cleveland, O.
Wheeler & Schebler Carburetor Co.	Indianapolis, Ind.
Wisconsin Motor Mfg. Co.	Milwaukee. Wis.

TRUCK ASSOCIATION'S NOMINATIONS.

At the annual Christmas banquet of the Motor Truck association of Philadelphia at the Adelphia, the programme included an explanation of the Pennsylvania laws covering motor fees and registration by Benjamin G. Eynon of Harrisburg, and an address on the "Spirit of Christmas" by the Rev. Floyd W. Tomkins, rector of Holy Trinity church.

The nomination committee presented the following list of officers for next year:

President, E. J. Berlet, Stability Motor Co.; vice president, J. P. Granston, Vim Motor Truck Co.; treasurer, W. R. Walton, Firestone Tire and Rubber Co., and secretary, W. H. Metcalf, Wire Wheel Corporation of America; directors to be elected for two years, Thomas K. Quirk, H. Kaiser & Co.; F. A. Kissel, Kelly-Springfield Tire Co.; F. P. Gaul, Gaul, Derr & Shearer Co.; directors for one year, to fill the unexpired term of Lee J. Eastman, Walter Y. Anthony, Packard Motor Car Co.

TO MOTORIZE FIRE DEPARTMENT.

Thomas J. Drennan, fire commissioner of New York City, is to advertise at once for sealed bids for $330,000 worth of fire fighting apparatus to replace horse drawn equipment now in the service of the department. This will include 21 pieces, three of which will take the place of horse drawn hose wagons in Manhattan borough, and the rest of the equipment will be divided between Brooklyn, Bronx and Queens boroughs.

This will do away with the last piece of horse drawn equipment in the city.

MUSKEGON POWER VEHICLE SHOW MARCH 7-13.

The Muskegon, Mich., Automobile Association has fixed March 7-13 as the time and the armory in that city as the place for the power vehicle show it is organizing, and preparations for the event are now being made by J. C. Fowler, manager.

Show Week Program of Meetings for the S. A. E.

A record attendance of members is prophesied this year for the annual meeting of the Society of Automotive Engineers. which will be, as usual, one of the big features of National Automobile Show week in New York. At the general opening session Wednesday morning, Jan. 7, reports of the various business committees will be discussed, and at 10 o'clock a symposium on "Needs and Tendencies of Engine Design" will include papers by F. H. Trego and L. H. Pomeroy.

Other papers to be read during the sessions will include "Aluminum Pistons," by E. G. Gunn; "Automobile Body Design," Mr. Brewster; "The Measurement of Vehicle Vibrations," Benjamin Liebowitz; "Spring Suspension," E. Favary; "Automotive Steam Systems," L. L. Scott; "Adapting Engine to the Use of Available Fuels," J. C. Vincent; symposium, "High-Speed Indicators," P. S. Tice, Thomas Midgley, Jr., S. W. Sparrow; "Lubrication Research," G. A. Kramer; symposium, "Combustion of Hydrocarbon Fuels," Dr. H. C. Dickenson, C. F. Kettering, H. L. Horning, Donald McKenzie, H. Honoman; "Mixed Fuels,' Dr. R. M. Strong; "A Standard of Carburetor Performance," O. C. Berry, professor of Gasoline and Automotive Engineering, Purdue University; "Supercharging Engines and Supercharges," Major G. E. A. Hallett; "Bettering the Efficiency of Existing Engines," H. C. Gibson.

In addition to the professional sessions there will be a carnival night at Hotel Astor, Wednesday evening, Jan. 7, and the usual annual dinner, Thursday evening the 8th, at the same place at which John Kendrick Bangs will be the toastmaster.

S. A. E. Has Benefited Motorists.

Back in 1904, a small. but representative group banded together to form the Society of Automobile Engineers. At the outset its activities were largely confined to the automobile industry, but in 1917, when the name was changed to the Society of Automotive Engineers, this indicated the inclusion of not only the automobile, but also the tractor, motor boat, stationary engine, aeronautics and other engineering fields, and it now has a membership of about 4500.

Among the most important benefits derived from the work of the society by the automotive industries has been the standardization of parts used in automotive vehicle construction. During the war it played a very important role, as committees worked in conjunction with the ordnance, motor transport and air service departments, assisting in standardization work. calculated to facilitate production and increase the output to meet the unusual demands. The International Air Craft Standardizing board was composed largely of S. A. E. members. The society still maintains its intimate relations with these departments.

Another very important field covered is research work. An attempt is being made to alleviate conditions arising out of fuel shortage, by endeavoring to discover how lower grades of fuel can be efficiently utilized by adapting existing engine types to the new conditions.

AUTOMOTIVE COURSE IN PHILADELPHIA PUBLIC SCHOOLS.

As a result of a conference of a committee representing the Philadelphia Motor Truck Association and a representative of the Board of Education of that city, an experimental class in automotive mechanics will be organized, provided that the motor truck dealers of the city furnish truck chassis or chassis parts for the classes to work on, and the board of education will furnish the necessary appropriation. The school will probably be established at the Frankford high school.

The annual meeting of the Material Handling Machinery Manufacturers' Association will be held in New York City next month.

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MODELS, CAPACITIES AND PRICES OF TRUCKS TO BE SHOWN AT NEW YORK

ACASON MOTOR TRUCK C., DETROIT, MICH.
Trade Name, Acason.

Model	Capacity Tons	Chassis Price
R	1	$2100
RB	1½	2300
H	2½	3150
L	3½	....
M	5	5150

ACME MOTOR TRUCK CO., CADILLAC, MICH.
Trade Name, Acme.

Model	Capacity Tons	Chassis Price
B	1	$2075
F	1½	2275
A	2	2875
C	3½	3875
E	5	4975

AMERICAN MOTOR TRUCK CO., NEWARK, O.
Trade Name, Ace.

Model	Capacity Tons	Chassis Price
..	1½	....
..	2½	....

ALL-AMERICAN TRUCK CO., CHICAGO, ILL.
Trade Name, All-American.

Model	Capacity Tons	Chassis Price
A	1	$1295

THE O. ARMLEDER CO., CINCINNATI, O.
Trade Name, Armleder.

Model	Capacity Tons	Chassis Price
HW	2	....
KW	3½	....

ATTERBURY MOTOR CAR CO., BUFFALO, N. Y.
Trade Name, Atterbury.

Model	Capacity Tons	Chassis Price
7R	1½	$2575
7C	2	2975
7C—XLWB	2½	3275
7C—XSTD	2½	3175
TD—LWB	3½	4075
7D Standard	3½	3875
8E	5	4975

AUTOCAR CO., ARDMORE, PA.
Trade Name, Autocar.

Model	Capacity Tons	Chassis Price
F	2	$2300

BETHLEHEM MOTORS CORPORATION, ALLENTOWN, PA.
Trade Name, Bethlehem.

Model	Capacity Tons	Chassis Price
D	1½	$1965
E	2½	2365
F	3½	3465

BROCKWAY MOTOR TRUCK CO., CORTLAND, N. Y.
Trade Name, Brockway.

Model	Capacity Tons	Chassis Price
S2	1½	$2100
K4	2	2950
R	3½	3900
T	5	5000

CLYDE CARS CO., CLYDE, O.
Trade Name, Clydesdale.

Model	Capacity Tons	Chassis Price
32X	1	$2185
42	1½	2445
..	2	....
65X	3½	3175
90	3½	4075
120B	5	4975

COMMERCIAL TRUCK CO. OF AMERICA, PHILADELPHIA, PA.
Trade Name, Commercial.

Model	Capacity Tons	Chassis Price
..	½	....
..	1	....
..	2	....
..	3½	....
..	5	....

COMMERCE MOTOR CAR CO., DETROIT, MICH.
Trade Name, Commerce.

Model	Capacity Tons	Chassis Price
E	1	$1590

CORBITT MOTOR TRUCK CO., HENDERSON, N. C.
Trade Name, Corbitt.

Model	Capacity Tons	Chassis Price
E	1	$2200
D	1½	2600
C	2	3250
B	2½	3500
A	3½	4200
AA	5	5000

TURNBULL MOTOR TRUCK AND WAGON CO., DEFIANCE, O.
Trade Name, Defiance.

Model	Capacity Tons	Chassis Price
B	1½	$1795
C	2	1995

DENBY MOTOR TRUCK CO., DETROIT, MICH.
Trade Name, Denby.

Model	Capacity Tons	Chassis Price
12	1	$1950
134	2	2450
25	2½	3250
27	3½	4250
210	5	4900

DIAMOND T MOTOR CAR CO., CHICAGO, ILL.
Trade Name, Diamond T.

Model	Capacity Tons	Chassis Price
J5	1	$2360
..	1¼	....
T—J4	1½	2755
J3	2	3185
LB	3½	4390
S	5	5660
R	5	5190

DODGE BROTHERS, DETROIT, MICH.
Trade Name, Dodge Brothers.

Model	Capacity Tons	Chassis Price
Dodge	½	$1010

DORRIS MOTOR CAR CO., ST. LOUIS, MO.
Trade Name, Dorris.

Model	Capacity Tons	Chassis Price
K4	2	$3285
K7	3½	4200

THE FEDERAL MOTOR TRUCK CO., DETROIT, MICH.
Trade Name, Federal.

Model	Capacity Tons	Chassis Price
SD	1	$2300
TE	1½	2500
UE	2	2800
WD	3½	3650
X	5	4500

FOUR WHEEL DRIVE MOTOR TRUCK CO., WEBBERVILLE, MICH.
Trade Name, F. W. D.

Model	Capacity Tons	Chassis Price
B	3	$4500

FULTON MOTOR TRUCK CO., FARMINGDALE, L. I.
Trade Name, Fulton.

Model	Capacity Tons	Chassis Price
C	1½	$2350

GARFORD MOTOR TRUCK CO., LIMA, O.
Trade Name, Garford.

Model	Capacity Tons	Chassis Price
25	1¼	$1890
70B	2	2990
77C	3½	4300
68	5	5000
69	6	5300

GRAHAM BROTHERS, EVANSVILLE, IND.
Trade Name, Graham.

Model	Capacity Tons	Chassis Price
..	..	....

GRAMM-BERNSTEIN MOTOR TRUCK CO., LIMA, O.
Trade Name, Gramm-Bernstein.

Model	Capacity Tons	Chassis Price
15	1½	$1995
20	2	2900
25	2½	3650
35	3½	4450
50	5	5500

HUFFMAN BROTHERS MOTOR CO., ELKHART, IND.
Trade Name, Huffman.

Model	Capacity Tons	Chassis Price
B	1½	$1695

HURLBURT MOTORS, INC., NEW YORK CITY.
Trade Name, Hurlburt.

Model	Capacity Tons	Chassis Price
..	2	$3750
..	3½	4400
..	5	5250

INDIANA TRUCK CORP., MARION, IND.
Trade Name, Indiana.

Model	Capacity Tons	Chassis Price
3	1	$2150
20	1½	2750
25	2	2950
35	3½	3600
L	5	4600

INTERNATIONAL HARVESTER CORP., CHICAGO, ILL.
Trade Name, International.

Model	Capacity Tons	Chassis Price
H	¾	$1550
F	1	1850
K	1½	2200
G	2	2600

JACKSON AUTOMOBILE CO., JACKSON, MICH.
Trade Name, Jackson.

Model	Capacity Tons	Chassis Price
B	3½	$4250

NELSON MOTOR TRUCK CO., SAGINAW, MICH.
Trade Name, Jumbo.

Model	Capacity Tons	Chassis Price
E	2½	$2775

KELLY-SPRINGFIELD MOTOR TRUCK CO., SPRINGFIELD, O.
Trade Name, Kelly-Springfield.

Model	Capacity Tons	Chassis Price
K31 and K32	1½	Both $3000
K35 and K36	2½	Both 3500
K40	3½	4400
K45	4	4550
K50	5	5150
K60	6	5500

COMMERCIAL CAR UNIT CO., PHILADELPHIA, PA.
Trade Name, Keystone.

Model	Capacity Tons	Chassis Price
40	2½	$1795

KISSEL MOTOR CAR CO., HARTFORD, WIS.
Trade Name, Kissel.

Model	Capacity Tons	Chassis Price
Delivery	¾	....
Utility	1½	$2275
Freighter	2	2975
Heavy Duty	3½	3975
Goliath	5	4785

H. J. KOEHLER MOTORS CORP., NEWARK, N. J.
Trade Name, Koehler.

Model	Capacity Tons	Chassis Price
C	1¼	$1765
M	2½	2985

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MACCAR TRUCK CO., SCRANTON, PA.
Trade Name, Maccar.

Model	Capacity Tons	Chassis Price
L	1½	$2750
H	2½	3500
M	3½	4300
G	5	5250

MASTER TRUCKS, INC., CHICAGO, ILL.
Trade Name, Master.

Model	Capacity Tons	Chassis Price
Junior J W	1½	$2290
Junior J I	1½	2190
Master M	2	2590
Master O	2	2690
Master T	2	2850
Master WL	2	2990
Master W	2	2890
Master A	3½	3990
Master A L	3½	4090
Master B	5	4990
Master B L	5	5290

MAXWELL MOTOR CO., DETROIT, MICH.
Trade Name, Maxwell.

Model	Capacity Tons	Chassis Price
..	1½	$1185

NASH MOTORS CO., KENOSHA, WIS.
Trade Name, Nash.

Model	Capacity Tons	Chassis Price
2018	1	$1650
3018	2	2250
Quad 4017	2	3250

NELSON & LEMOON, CHICAGO, ILL.
Trade Name, Nelson & LeMoon.

Model	Capacity Tons	Chassis Price
F1	1	$2250
F1½	1½	2425
F3½	3½	3750
F5	5	4750

OLDS MOTOR WORKS, LANSING, MICH.
Trade Name, Oldsmobile.

Model	Capacity Tons	Chassis Price
..	¾	$1250

ONEIDA MOTOR TRUCK CO., GREEN BAY, WIS.
Trade Name, Oneida.

Model	Capacity Tons	Chassis Price
A	1	$2290
B	1½	2650
C	2	3000
D	3½	3700
E	5	4750

PACKARD MOTOR CAR CO., DETROIT, MICH.
Trade Name, Packard.

Model	Capacity Tons	Chassis Price
E	1½	$3200
2E	2	3600
3E	3	4250
4E	4	4550
5E	5	5450
6E	6	5700

PAIGE-DETROIT MOTOR CAR CO., DETROIT, MICH.
Trade Name, Paige.

Model	Capacity Tons	Chassis Price
50-18	2½	$2950
51-18	3½	3950

PIERCE-ARROW MOTOR CAR CO., BUFFALO, N. Y.
Trade Name, Pierce-Arrow.

Model	Capacity Tons	Chassis Price
X4	2	$4300
R9	5	5500

RAINIER MOTOR CORP., FLUSHING, L. I., N. Y.
Trade Name, Rainier.

Model	Capacity Tons	Chassis Price
R11	¾	$1750
R9	1	1875
R6	1½	1975
R8	2	2400

REO MOTOR CAR CO., LANSING, MICH.
Trade Name, Reo.

Model	Capacity Tons	Chassis Price
F	¾	$1285

REPUBLIC MOTOR TRUCK CO., ALMA, MICH.
Trade Name, Republic.

Model	Capacity Tons	Chassis Price
..	¾	....
Dispatch	1	....
11X	1½	$1885
..	2	....
20	3½	3595

ROWE MOTOR MANUFACTURING CO., LANCASTER, PA.
Trade Name, Rowe.

Model	Capacity Tons	Chassis Price
CDW	2	$3000
CDW	2½	3250
DEW	3½	3800
FW	5	4900

SANDOW MOTOR TRUCK CO., CHICAGO, ILL.
Trade Name, Sandow.

Model	Capacity Tons	Chassis Price
G	1	$1795
CG	1½	2090
I	2	2375
J	2½	2975
..	3½	....
L	5	4775

SANFORD MOTOR TRUCK CO., SYRACUSE, N. Y.
Trade Name, Sanford.

Model	Capacity Tons	Chassis Price
25	2½	$3000
M	3½	3995
35	3½	3975
50	5	4750

G. A. SCHACHT MOTOR TRUCK CO., CINCINNATI. O.
Trade Name, Schacht.

Model	Capacity Tons	Chassis Price
..	2	$3350
..	2½	3650
..	3½	4150
..	5	5150

SCHWARTZ MOTOR TRUCK CO., READING, PA.
Trade Name, Schwartz.

Model	Capacity Tons	Chassis Price
..	1½	$2175
B	1½	2375
..	2½	2675
..	5	....

SELDEN MOTOR VEHICLE CO., ROCHESTER, N. Y.
Trade Name, Selden.

Model	Capacity Tons	Chassis Price
A	1½	$2185
JWBL	2	3050
A	3½	3850
DL	5	5000

STANDARD MOTOR TRUCK CO., DETROIT, MICH.
Trade Name, Standard.

Model	Capacity Tons	Chassis Price
76	2	$2800
66	3½	3675
86	5	4650

STERLING MOTOR TRUCK CO., MILWAUKEE, WIS.
Trade Name, Sterling.

Model	Capacity Tons	Chassis Price
..	1½	....
..	2½	$3300
..	3½	4325
..	5	5100
7	7	5600

STEWART MOTOR CORP., BUFFALO, N. Y.
Trade Name Stewart.

Model	Capacity Tons	Chassis Price
11	¾	$1195
8	1	1650
9	1½	1975
7	2	2575
10	3½	3500

SULLIVAN MOTOR TRUCK CORP., ROCHESTER, N. Y.
Trade Name, Sullivan.

Model	Capacity Tons	Chassis Price
F	1½	$2350
E	2	2975
EL	2	3050

TRANSPORT MOTOR TRUCK CO., MT. PLEASANT, MICH.
Trade Name, Transport.

Model	Capacity Tons	Chassis Price
20	1	$1650
30	1½	2050
50	2	2585

THREE POINT MOTOR TRUCK CO., NEWARK, N. J.
Trade Name, Three Point.

Model	Capacity Tons	Chassis Price
..	..	....

TRIANGLE MOTOR TRUCK CO., ST. JOHNS, MICH.
Trade Name, Triangle.

Model	Capacity Tons	Chassis Pri
A	1½	$2185
B	2	2850

UNION MOTOR TRUCK CO., BAY CITY MICH.
Trade Name, Union.

Model	Capacity Tons	Chassis Price
F	2½	$2675
H	4	3500

VELIE MOTORS CORP., MOLINE, ILL.
Trade Name, Velie.

Model	Capacity Tons	Chassis Price
46	1½	$1925
25B	2	2950
26B	3½	3900

VIM MOTOR TRUCK CO., PHILADELPHIA, PA.
Trade Name, Vim.

Model	Capacity Tons	Chassis Price
27	½	$1095
25	1	2195
22	2	3150
23	3	3950

WALKER VEHICLE CO., CHICAGO, ILL.
Trade Name, Walker.

Model	Capacity Tons	Chassis Price
..	½	....
..	1	....
..	2	....
..	3½	....
..	5	....

WALTER MOTOR TRUCK CO., NEW YORK, N. Y.
Trade Name, Walter.

Model	Capacity Tons	Chassis Price
S	5	....

WARD MOTOR VEHICLE CO., MT. VERNON. N. Y.
Trade Name, Ward.

Model	Capacity Tons	Chassis Price
..	½	....
..	1	....
..	2	....
..	3½	....
..	5	....

WARD-LA FRANCE MOTOR TRUCK CO., INC., ELMIRA, N. Y.
Trade Name, Ward-La France.

Model	Capacity Tons	Chassis Price
2A	2	$3350
3½A	3½	3900

J. C. WILSON CO., DETROIT, MICH.
Trade Name, Wilson.

Model	Capacity Tons	Chassis Price
F	1	$1750
E	2	2950
G	3½	3950
H	5	4800

WINTHER MOTOR TRUCK CO., KENOSHA, WIS.
Trade Name, Winther.

Model	Capacity Tons	Chassis Price
39 and 430	1½	$2150 and 2375
49	2	3000
69	3	3900
479	3½	4900
89	4	4200
109	5	5000
129	6	5250
149	7	5500

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FEDERAL MODEL SD ONE-TON TRUCK

A FEATURE of the exhibits of Federal trucks made at the different shows will be a model SD chassis, which will be shown for the first time at New York. This is a unit with a load capacity of one ton and will succeed the model S of the same rating, which has been produced for a considerable period by this company. The chassis is now in production and it will be built in large numbers.

The design has been developed with unusual care to meet the service requirements for a machine that will have exceptional utility; that will be equipped with pneumatic tires and can be driven to a maximum speed of 25 miles an hour. The development of the design extended over a considerable period and the object of the engineering department was to perfect the model S so far as was practically possible to obtain comparatively high speed and endurance. This is not meant to discount the model S chassis, but rather to emphasize that the company has realized that the economy of the small truck is in large measure in ratio to its speed; that machines can be driven faster when shod with pneumatic tires than with solid tires; that the factors of safety must be relatively high; that all moving parts must be afforded the greatest degree of protection against abrasives; that simplification and accessibility are necessary to minimize the labor incidental to adjustment and maintenance.

Chassis Detail Highly Developed.

In other words the chassis construction detail has been carefully studied and wherever practical changes have been made which will contribute to the result desired. To enumerate these changes would require a list of considerable proportions and when one realizes that each has a sufficient engineering value to justify it the aggregate may be said to be material.

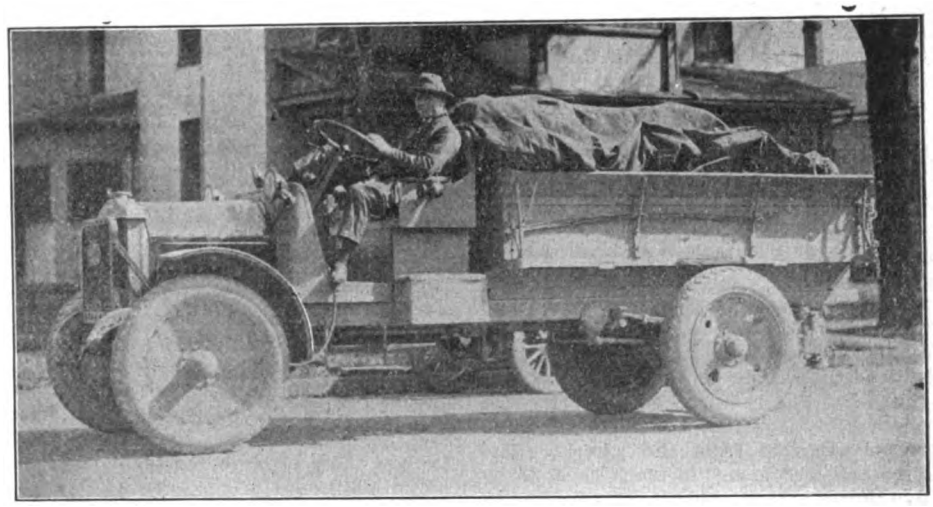
The engine is a Continental Red Seal, a replica of the class B type, a four-cylinder, four-cycle, water cooled, L-head, vertical construction, with detachable head. The cylinder bore is 3¾ inches and the stroke five inches, and the power rating by the S. A. E. formula is 22.50, but it is claimed it will develop more than 30 horsepower at normal speed by brake test. The engine is constructed for heavy duty and much care has been directed toward cooling and lubrication.

The cylinders are cast en bloc with the water jacket integral and the water chambers are extremely large, insuring free circulation. The pistons are each fitted with three diagonally split rings. The crankshaft is a three-journal type, with the flywheel flange and thrust flanges integral, heat treated and ground. The camshaft is drop forged from special steel with the cams integral.

Engine Cooling and Lubrication.

The engine is cooled by a circulation of water forced by a centrifugal pump through the cylinder jacket and a large radiator with a separable cooling section. The top and bottom tanks of the radiator are pressed steel, rust proofed, and the assembly is with series of bolts and nuts so that replacement of the core can be done with but little labor and in a short time. The radiator is spring mounted and it is protected by a heavy guard supported by diagonals from the side columns to the frame side members. The radiation is promoted by a large fan mounted on the forward end of the engine block that is driven by a flat belt from a pulley on an extension of the water pump shaft.

The engine is lubricated by a pressure feed system, the lubricant being drawn through a filtration screen at the intake in the pump well and forced through a manifold to the main bearings and timing gearset, and thence through a drilled crankshaft to the crankpins. The cylinders, pistons, camshaft bearings, cams and valve tappets are lubricated by the throw-off from the crankpins and by oil trapped in pockets that supply the camshaft bearings and the wristpins. The excess oil drains from the crank chamber to the oil reservoir. There is a compression relief valve in the oil system and the pump is self priming.



The Model SD One-Ton Federal Truck, Th at Will Succeed the Model S, a Very Highly Perfected Type for Pneumatic Tire Equi pment and Designed for Fast Driving.

The engine is controlled by a centrifugal hydraulic type governor that is claimed to be very sensitive and dependable. The ignition current is generated by a high-tension magneto and the fuel is supplied through a vacuum feed system from a 20-gallon drawn steel tank under the driver's seat to an automatic float feed carburetor. All the fuel is filtered.

Power Transmission System.

The engine is combined with a dry plate clutch with asbestos fabric friction rings enclosed in the bell housing of the flywheel. The clutch is practically self-compensating and requires no lubrication. The engine is mounted at three points.

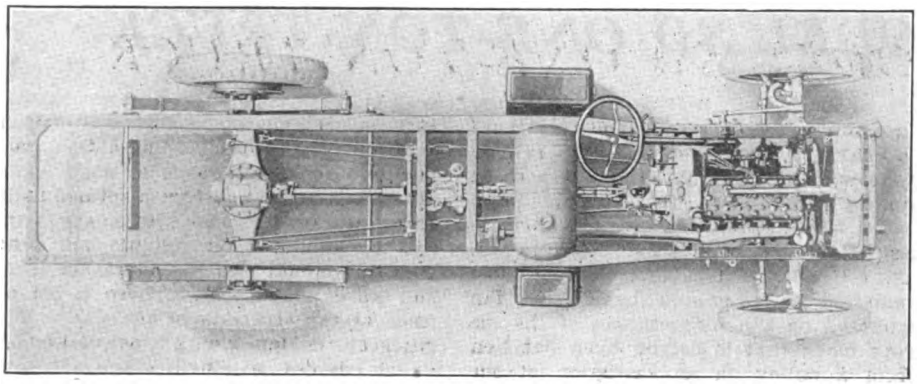
The power transmission system consists of a two-section shaft and a gearset that is spring mounted at three points on two frame cross members. There is a shaft section forward of and back of the gearset. The shaft sections are tubular with universal joints at the ends of each section. The gearset is a sliding gear selective type with three forward speed ratios and reverse, and with splined main shaft couplings. The shafts are large and are mounted on annular ball bearings throughout and the gears are large and have wide faces. There is an oil filler at the left side of the case. The gearset is designed with a power takeoff, which drives a single stage air compressor for inflating the tires, that may be controlled by a hand lever at the right side of the frame. The operating lever of the compressor is interlocked so that operating is positive. The outlet is mounted just outside of the frame side member and is very accessible. The universal joints of the driving shaft are an open self-lubricating type that are claimed to be very enduring and efficient.

The rear axle is a Timken worm shaft and worm wheel, semi-floating type, with a single piece pressed steel housing, that is claimed to be comparatively light, but to have exceptional structural strength. This is the latest Timken axle of this type and has all the qualities claimed for these units with the added value of greatly reduced weight. It is, of course, equipped with Timken roller bearings throughout and the differential gearset is removable as a unit by taking off the cover plate of the bowl. The lubrication is by a bath of oil.

General Chassis Construction.

The front axle is a special steel drop forging made by the Federal company that is somewhat heavier than the unit formerly used for this size chassis and is designed to have unusual endurance. The frame is a Federal construction of pressed steel channel section five inches wide at the center of the side members, and these taper from the center to ends. The webs are wide and the width of the frame is 30½ inches at the forward end and 34 inches at the rear, the webs decreasing in width ahead of the driver's seat. There are four cross members,

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Plan View of the Model SD Federal One-Ton Truck Chassis, Showing the Power Plant, Power Transmission System and Lightweight Semi-Floating Worm Driven Rear Axle.

each well gusseted, besides the reinforcing of the engine support arms and the tie rod between the hangers that carry the rear ends of the rear springs. When loaded the frame is 30 inches above the ground.

The frame is suspended on semi-elliptic springs, the front set 40 inches long and 2¼ inches wide and the rear set 52 inches long and 2½ inches wide, of eight leaves. The ends of the rear springs are shackled, the forward ends to heavy hangers that are designed for the mounting of the pivoted front ends of the radius rods. The radius rods are tubular and the rear ends are mounted to special ball fittings on the rear axle housing and the rod sockets are buffered with helical springs, which absorb the driving and braking stresses. This suspension insures unusually complete absorption of all wheel shocks.

The wheelbase is 132 inches and the tread 56 inches. The wheels are the Disteel dished and tapered disc type with straight side rim with bolted outer rim. By the removal of this rim the pneumatic tires can be easily installed on or removed from the wheels. The tires are cord, non-skid truck type, 36 by five inches front and 36 by six inches rear.

The Control Members and Fittings.

The control is by a steering column with 18-inch hand wheel at the left side, with clutch and service brake pedals, foot accelerator, gear shifting and emergency brake levers at the center of the footboard, and a throttle lever on the hand wheel. The brakes are duplex internal expanding, operating within drums on the rear wheels. The driver's seat and the dash are pressed steel with the edges lapped for reinforcement and riveted. The footboards, fenders and running boards are pressed steel.

The fenders are a short arc type just covering the wheels, and the running boards are carried on heavy brackets with space between the fenders and boards to reach the power plant conveniently at either side. On the left side of the driver's seat outside of the frame is the tool box of pressed steel, and at the right side is a small wood deck on brackets on which is carried the battery, the tray being on rubber buffers and enclosed with a steel cover, firmly clamped, but instantly removable.

On the dash is the instrument board that carries the oil gauge, the speedometer, the ammeter and the ignition switch, all of which are protected and distinctly visible or accessible. The current for the electric lighting system is supplied by a generator at the left side of the engine, driven by the shaft that drives the water pump and magneto, and the lamps are mounted on the dash and at the rear of the chassis frame. The brackets for the dash lamps are a special type in which the lamps may be adjusted so as to project the rays in any plane to meet legal requirements.

Much care has been taken to insure lubrication of the chassis, all parts in moving contact having the Alemite fittings with which grease is forced to all joints and bearings under pressure of 250 pounds to the square inch. These effectually exclude dust and retain the lubricant.

The chassis weight is 3600 pounds and the allowance for a body is 900 pounds. The loading space behind the driver's seat is 112 inches length. The chassis is equipped with what has been specified, mechanical horn, jack, oil can, grease gun and complete kit of tools. The price, not including war tax, is $2300 f. o. b. Detroit. An electric starter is optional at an additional price.

PHILADELPHIA MOTOR TRUCK SHOW JAN. 19-24.

The Motor Truck Association and the Automobile Trade Association of Philadelphia will jointly have a truck show in the Commercial Museum building in that city Jan. 19-24, the week following the passenger car exhibition. This is expected to be the largest show in the history of the organizations.

STUDY OF PRODUCTION METHODS BY U. S. RUBBER MEN.

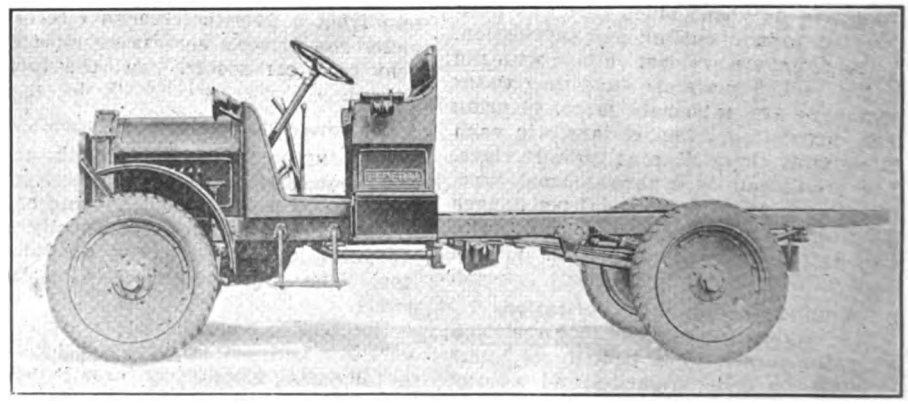
Classes that total 825 men have been organized at the Hartford, Conn.; Detroit and Indianapolis plants by the tire division of the United States Rubber Co., to a plan for training foremen and others of the supervisory force, for the study of modern production methods from specially prepared text, practical factory problems and discussion. The course consists of six meetings at three-week intervals held at the plant after hours.

The object of the meetings is to make possible the application of the work to the special production requirements. At each meeting there is a lecture by a production man, followed by round table discussion. The groups include the foremen and the chief plant executives, which insures clear interpretation of the managerial policies. The subjects dealt with include: "How to Promote Team Work in the Shop;" "Handling Workers by Methods That Make for Harmony and Efficiency;" "Improved Methods of Factory Organization;" "Handling Materials and Equipment Productively;" "Reducing Costs and Stopping Leaks," and "Modern Ideas of Management." The course in the schools is conducted under the direction of the Business Training Corp., New York City, which supplies the text material and the instruction service, and the lectures are given by its staff. The course is not technical, but deals with basic fact and principle.

MISSOURI HIGHWAY ENGINEERS' TWO-DAY MEETING.

The Highway Engineers' Association of Missouri will have a two-day meeting at the Baltimore Hotel, Kansas City, Jan. 8-10. There will be papers dealing with an unusual diversity of subjects, and addresses will be made on "Testing and Inspection of Road Building Materials" by E. J. McCaustland, dean of engineering at the Missouri State University, and "Federal Road Aid Construction" by J. C. Winders, division engineer of the United States Bureau of Public Roads.

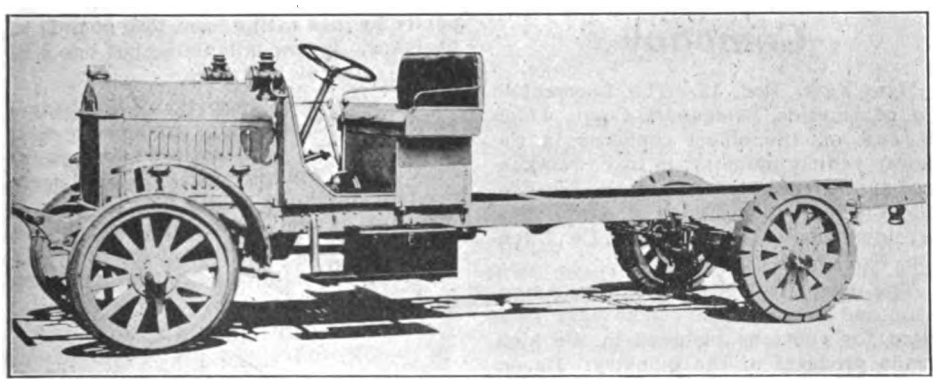
The Martin-Parry Corporation, builder of bodies for trucks, with factories at York, Pa., and Indianapolis, Ind., has established a factory branch at Buffalo, which is managed by Frank S. Haling.



The Federal Model SD Truck Chassis, Side View, Showing the Full Shackled Rear Spring, the Radius Rods, the Transmission Gearset Amidships and Disc Steel Wheels.

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NEW KOEHLER MODEL 2½-TON TRUCK



The Side View of the Model M 2½-Ton Koehler Truck Chassis, Which Will Be Seen for the First Time at the New York Exhibition.

CLAIM is made by the H. J. Koehler Motors Corporation, Newark, N. J., builder of Koehler trucks, that the new series of these machines, now being produced commercially, is a highly developed design that is regarded as superior to any the company had built. The new Koehler trucks will be shown for the first time at the New York truck show.

The Koehler corporation has been engaged in the industry for a number of years and is well known. Within a few months it reorganized its engineering and selling departments, and the former perfected the design that has been determined a standard and to which all of the chassis built will conform.

The design was developed by C. D. Peterson, and it is claimed to be the result of several years experimental work. Statement is made that the endurance insured by the extremely large factors of safety justifies the estimate that the truck ought to afford, with reasonable maintenance and care, eight years' efficient service instead of the five years usually allowed for machines built to standard practice.

The company has not sought to obtain longevity of the chassis by unusual construction, but by the careful proportioning of the units, the methods and details of assembling, the extreme care given to lubrication and the protection of all moving parts in contact from the influence of abrasives. Obviously, with adequate lubricity and all components in frictional contact thoroughly enclosed, the degree of wear ought to be minimized as compared with constructions lacking these essential qualities. While the chassis is exceptionally protected against wear, all parts are very quickly accessible for inspection, adjustment or repair.

Chassis Lubrication from Reservoirs.

Statement is made that many parts that are lubricated by the driver or garage worker, and to a minimum established by the discipline of the owner's organization, are designed or equipped for automatic oiling. The chassis has specially designed oil reservoirs, some of which are tubular members, the larger of which contain several months supply of lubricant. The intention is to have the chassis reservoirs replenished systematically at intervals, this insuring that there shall be no neglect. There are no grease cups and for this reason no uncertainty as to filling or of the lubricant reaching the wearing parts.

The engine is a Hercules, which is described as being constructed especially for the Koehler company, the latest type produced for truck construction, and claimed to be exceptionally efficient. The engine is maintained to develop for the model M 2½-ton chassis 35 horsepower. The engine is mounted at three points in the chassis frame and equipped with a Simplex "gridvalve" solid shaft driven governor, a Zenith carburetor and an Eisemann high-tension magneto. It is cooled by a centrifugal pump and a large armored radiator and belt driven fan.

The Power Transmission System.

The clutch is a Brown-Lipe dry disc type construction having 10 plates, that is claimed to be self-compensating and to require practically no lubrication. From this the power is transmitted through two short shafts and a Brown-Lipe selective type sliding gear gearset having four forward speed ratios and reverse.

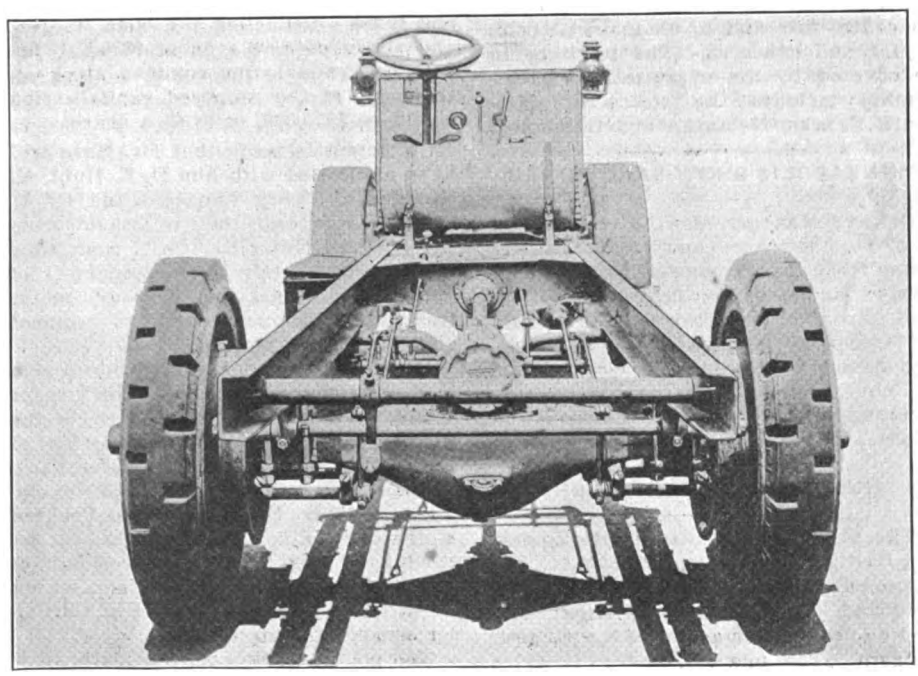
The transmission gearset, which has direct drive on the fourth gear ratio, is located amidships and is mounted under two pressed steel frame cross members and is suspended at three points. Between the clutch and the gearset the shaft is driven by two heavy flexible joints, which are designed to yield five degrees either way, according to the stress upon them. These joints are expected to compensate any variance from accurate alignment that may develop, as well as absorbing the initial stresses of starting, braking and stopping.

The shafts and the universal joints at either end of the rear section are Spicer products. The rear section is coupled to the worm shaft of a Timken full-floating worm shaft and worm wheel axle, having a single piece housing. All shafts are mounted on Timken roller bearings and the axle is lubricated by an oil bath in which the worm wheel revolves. The worm shaft, worm wheel and differential gearset are assembled as a unit on the cover of the bowl or center section of the axle and are quickly removable for any need. The front axle is a heavy special steel drop forged I section.

Other Details of the Chassis.

The frame is a Parish & Bingham pressed steel channel section construction, with heavy cross members and gusset plates, that is suspended on Mather chrome-vanadium semi-elliptic springs, all the leaves being heat treated and ground. The bushings are a special metal, carefully machined, and the front ends of the rear springs are pivoted on the hangers, the driving and braking stresses being absorbed by the springs.

The wheelbase of the chassis is 162 inches and the tread is 56 inches forward and 157½ inches rear. The wheels are wood, artillery type, Wayne make, and



Looking from the Rear Forward Over a Model M 2½-Ton Koehler Truck Chassis, a Feature of the Design Being the System of Magazine Lubrication.

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are shod with solid band tires. The steering column, located at the left side, is a Lavine, and the linkage is very heavy. The control is conventional and the service and emergency brakes are duplex internal expanding, operating within flanged drums 18 inches diameter, which are bolted to the rear wheels. The fenders are heavy steel, retained by large steel bolts.

The chassis is designed to be so far as possible proof against the minor failures that cause loss of time of crew and vehicle. All fuel and oil connections are a solderless type and there is little probability of breakage. The unit is sold with the usual equipment.

Statement is made by the company that because of the increased demand for its trucks it is now building a new factory at Newark, which will be completed in the next several months.

MISSOURI RIVER VALLEY ROAD BUILDERS ORGANIZE.

The contractors, representatives of material companies, county, state, municipal and federal engineers, located in the section included in the valley of the Missouri river, have organized the Missouri Valley Road Builders' association for the purpose of promoting the mutual welfare of the highway industry and to attempt to place it before the public on the same basis as other industries.

The following officers were elected: Chairman, M. W. Watson, state highway engineer of Kansas; secretary-treasurer, M. R. Amerman, contractor, Salina, Kan.; executive committee, the chairman and secretary-treasurer and S. A. Fones of the Independent Gravel Co., Joplin, Mo.; A. W. Graham, state highway engineer of Missouri, and R. E. O'Brien of the Cook & O'Brien Construction Co.

It is planned to hold meetings monthly in Kansas City, Mo. The membership is open to all highway officials, state, county, municipal and federal, to all contractors and to all material companies and concerns. The territory to be covered by the organization's membership includes the states of Missouri, Kansas, Nebraska and Oklahoma.

MINNEAPOLIS SHOW SANCTIONED.

General Manager M. L. Heminway of the Motor and Accessory Manufacturers' Association, has announced that members of the association have been authorized to participate in the show to be held at Minneapolis, Minn., by the Minneapolis Automobile Trade Association, Jan. 31-Feb. 7. Besides this, shows have been sanctioned at New York, Chicago and Boston.

HUDSON BUYS STRICKLER.

The plant and business of the Strickler Hay Tool Co., Janesville, Wis., has been purchased by the Hudson Manufacturing Co., Minneapolis, Minn., and will be operated as a unit of the Hudson concern. The officials of the Strickler company will remain in charge of the Janesville activities.

Hare Is President of New Locomobile Company

New York, Dec. 15.—The Locomobile Co. of America, Bridgeport, Conn., which is one of the oldest concerns in the power vehicle industry, is to be reorganized and will be succeeded by the Locomobile Co., of which Emlen S. Hare, now president of the Mercer Motor Co., Trenton, N. J., will be president.

The company has always been prominent and its cars and trucks have been rated for years as included in the high grade products of the industry. Its engineering has always been distinctive and in charge of Andrew L. Riker, one of the best known of automotive engineers.

The reorganization and financing of the company is directed by Colgate, Parker & Co., Hemphill, Noyes & Co., who have associated with them William Salomon & Co. Under the plan the authorized capitalization will be 300,000 shares of no par value common stock and $5,000,000 seven per cent. cumulative preferred stock of $100 par value. Of this stock 200,000 shares of common and $3,500,000 preferred will be issued. The authorized bonded debt will consist of $2,500,000 first and refunding six per cent. bonds, due 1935, of which $1,416,000 will be outstanding.

The Mercer Motor Co. will, subject to approval of its share holders, acquire a substantial block of the common stock of the new company, and will take option to purchase from the Locomobile company 100,000 shares of common stock at $35 a share, which will make the Mercer Motor Co. the largest individual stockholder and will make possible acquisition of control later on.

The net profits of the Locomobile Co. of America for the year ended June 30, 1919, were $1,249,823 after depreciation and taxes. Deducting the bond interest and preferred dividends of $319,823, the balance available for common stock on the basis of the proposed capitalization would be $930,000, or $4.65 a share.

Statement is made that Mr. Hare will have associated with him O. E. Hunt, H. S. Church, Henry Lansdale and C. L. Guyman, who, until their retirement from the Packard Motor Car Co. a short time ago, were respectively chief engineer of motor cars, chief engineer of motor truck, car sales manager and government distribution manager.

Mr. Hare is one of the best known men in the automotive industry. He was for a considerable period interested in the Commercial Truck Co. of America of Philadelphia and later went to the Packard Motor Car Co. of New York, becoming president. He went to the Packard Motor Car Co. as vice president, but retired from this to become president of the Mercer Motor Co. Whether or not he will continue as executive of the latter concern is not stated.

The policy of the company outlined is to continue its present series of high grade passenger cars, and to add a medium size and lower priced car which will not, however, compete with the Mercer car. The company also will build a complete series of trucks ranging in capacity by load rating from 1500 pounds to five tons. It now is building but one size truck, rated at four tons.

The plant of the company at Bridgeport is large and extremely well equipped. The company produces practically all its construction units and parts used in assembly in its own shops. It operates a number of branches in different sections of the country.

ECONOMY OF ONE LOAD PAID FOR BIG TRAILER.

The remarkable possibilities of special equipment are not generally understood, even by those operating it. The Detroit Edison Co. owns a Fruehauf trailer with capacity of 15 tons, designed and built for occasional service. The company distributes electric energy for lighting and power and interruption of its service means direct loss of revenue and retardation of the business of those depending upon it for both these essentials.

The maintenance policy is restoration of service in the event of failure with temporary or permanent repair. Expense is secondary. Recently there was need of sending a transformer to Pontiac, 19 miles distant. This work, basing judgment on experience, would have required from three days to a week were the transformer shipped by railroad or hauled by animal vehicle, and service could not have been restored.

With the trailer a transformer was taken from Detroit to Pontiac in two hours, and service was interrupted but three hours, and the saving in revenue in this one work paid for the unit, to say nothing of the actual economy for those dependent upon the company for light and power.

The trailer was built for this work and is used within a radius of 40 miles of Detroit. Moving a transformer formerly cost from $300 to $800, but this is reduced to a comparatively small sum with the special trailer.

USED TRUCKS TO CREATE POWER.

During the period in Detroit when operation of industries dependent upon the use of coal for light or power was limited to six hours a day, power for driving the machinery and machine tools at the plant of the Commerce Motor Car Co. was created by using a number of trucks. The machines were located and coupled so that operations were during the usual work hours, though the office force worked but six hours.

Charles F. Scribner, formerly industrial engineer with Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn., and consulting engineer for L. V. Estes, Inc., Chicago, has become associated with the Business Service Corporation of America, Chicago, as president and chief engineer.

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TRAILER BUILDERS' NEW YORK BUYING CENTER.

Through the efforts of the Trailer Manufacturers' Association of America, a central location has been established in New York City for the display of trailers and the furnishing of general information regarding the industry and the use of trailers. Together with a number of its members, the association has taken offices and exhibition space aggregating about 5000 square feet in the International Tractor, Farm Implement & Trailer Exchange in the Grand Central Palace. In this group are included all but three or four of the members having branch offices, distributing agencies or dealers in the Metropolis. All the latest models manufactured by the following companies will be displayed permanently on the seventh floor of the Palace:

Detroit Trailer Co., Detroit; Fruehauf Trailer Co., Detroit; King Trailer Co., Ann Arbor, Mich.; Martin Rocking Fifth Wheel Co., Springfield, Mass.; Northway Trailer Car Co., East Rochester, N. Y.; Ohio Motor Vehicle Co., Cleveland, O.; Rogers Brothers Co., Albion, Pa.

Several other members and several companies not yet members of the association, contemplate installing displays in the exchange. This exchange is expected to prove a great convenience to business houses in the Metropolitan district and to visitors from all parts of the United States and foreign countries who desire to investigate the subject of trailers and to make purchases. Here they will find on view many makes, types and sizes of these vehicles, and representatives will be on hand to furnish all required information.

Visitors to the National Automobile Show and other industrial exhibitions to be held during the year on the lower floors of the Grand Central Palace will find it convenient to take the elevators and inspect the free trailer displays on the seventh floor.

TRUCK CAMPING TOUR COVERED 9000 MILES.

Mr. and Mrs. John McIntosh and their son-in-law and daughter are back at their home at Trenton, N. J., from a journey of 9000 miles, made in a Ford truck. The truck carried camp equipment and the greater part of three months the party camped where it was when night fell. The initial objective was Ames, Ia., but from there the party drove into the Northwest and visited the Yellowstone National Park. The expense for oil, fuel and incidental repairs was $127.37.

MACK BULLDOG MAGAZINE.

D. O. Skinner, advertising manager of the International Motor Co., maker of Mack trucks, announces that plans are completed for the issuing of the "Mack Bulldog," a new trade magazine. This publication will be edited by H. C. Bailey, formerly manager of the Mack branch in St. Louis, Mo.

Kept Works Running with Temporary Power Plants

The recent coal shortage which seriously affected many of the big automobile plants in the various manufacturing centers in the Middle West, was met with more or less ingenuity by executives who sought to keep the wheels turning and the thousands of employees busy when denied electric light and power supplied by coal consuming plants, which were obliged to curtail or suspend service to so-called non-essential industries.

In a number of instances the oil burning power plants of tractors were utilized with complete success and the adaptability of this type of equipment was demonstrated. For example, at Indianapolis, the Nordyke & Marmon Co. installed several large tractors and these worked so satisfactorily that other industrial plants utilized the same means of power, including the Hide, Leather & Belting Co., the Diamond Chain & Manufacturing Co., the Stevenson Gear & Manufacturing Co., the Atkins Saw Co. and the Kahn Tailoring Co.

The Warner Gear Co., Detroit, kept its wheels turning by the use of kerosene burning tractor engines. Other Detroit industries kept running by this method were the Commerce Motor Car Co. and the Locke Machine Works.

The Avery Co., Peoria, Ill., generated 450 horsepower by belting tractors to the line shafts in the factory and were enabled to keep running to capacity. The International Harvester Co., Chicago, adopted the same expedient.

The Cole Motor Car Co., Indianapolis, installed a battery of Milwest Deisel engines and a number of Fordson tractor engines. The Apperson Brothers Automobile Co., Kokomo, Ind., used its own automobile engines for temporary power.

The Service Motor Truck Co., Wabash, Ind., rigged up a Buda 4¼ by 5½ engine, such as it uses in its 1½-ton model 36 and 2½-ton model 51 motor trucks, on a testing stand and was able to keep its machine shop in operation. The Buda engine in question ran continuously at full speed from 7 a. m. to 12 o'clock noon and from 12:45 to 4 p. m. It furnished sufficient power for the operation of two large radial drills, eight lathes, four shapers, 10 drill presses, six milling machines, two threading machines, four tool grinders, one key setter and one tapping machine. Several other engines of the same type were installed in various parts of the plant so that the factory was kept running to capacity. It is stated that the Buda engines performed this unusual work as easily as did the electric motors ordinarily used, though of course the motors were installed in more advantageous positions.

The Briscoe Devices Co., maker of Scoe carburetors, lost very little time at its Pontiac, Mich., factory on account of the coal shortage. A farm tractor was obtained and run into the company's dynamo room. A belt was run from the tractor's take-off pulley to the line shaft of the factory and all work proceeded as usual until the period of coal restriction was ended.

INCREASED PRICES OF TRUCKING.

As an indication of the inevitable upward trend of prices in all departments at the present time, it may be cited that when the Department of Public Works at Philadelphia recently advertised for bids for furnishing double and single teams and motor trucks for hauling material for use by the street repair forces connected with the Bureau of Highways during 1920, in all of the 15 proposals received the prices quoted were from 10 to 15 per cent. higher than those now paid.

MCCLAREN SALES POLICY.

H. L. McClaren, president of the McClaren Rubber Co., Charlotte, N. C., announces that McClaren tires will be sold the coming year exclusively through distributors and dealers. Mr. McClaren states that from his experience in tire distribution he has become convinced that dealers are more efficiently served through distributors than by branches.



Buda Engines Temporarily Installed to Supply Power at Service Motor Truck Co.'s Plant, Wabash, Ind., During Coal Shortage.

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FIXING VALUES OF TRADED TRUCK

Basis of Serviceable Parts Salvaged by Dealer Proposed, These to Be Disposed of to Original Manufacturer by a Clearing House System.

INDIVIDUAL valuation of a used vehicle and accepting it in part payment for a new machine was given quite as much prominence at the annual meeting of the National Association of Motor Truck Sales Managers at Detroit last month as any one subject considered. It was specifically dealt with in a paper presented by J. W. Allan, manager of the eastern branch of the Service Motor Truck Co., New York City, and reviewed to considerable extent by Norvil A. Hawkins, formerly sales manager for the Ford Motor Co., now a business man of Detroit, who has had unusually wide experience in power vehicle sales.

Mr. Allen treated the subject in a forceful way. He did not hesitate to apply strong language, for he maintained it was a phase of selling that threatened many of the distributors and dealers, and unless this was realized there could be no stability in the power truck trade. He stated that accepting used trucks of unknown market value in part payment for new meant eventual ruin for many dealers, that it meant the accumulation of machines that were in the end disposed of for whatever prices were obtainable, and the allowances so reduced the profits of the dealers they could not continue.

He maintained that selling trucks without a sufficient profit was ruinous from any aspect and he proposed that used trucks be accepted at the value of the parts that could be used for repairs, the valuation being fixed by a second-hand parts catalogue; that the saleable parts be returned to the manufacturer or to one or more of the distributors representing him for distribution to truck owners. That the transactions be practically those of a clearing house, appeared to him to be a reasonable proposition.

He proposed that the sales contracts be so changed that the manufacturer, distributor and dealer would live up to every essential of the plan, and that the manufacturer have a monthly statement of the finances of his representative.

The paper in full was as follows:

Trading on Unknown Values.

If I am expected to bring you anything basically new, I bring a disappointment. If you can be content with a new application of old principles, I have hopes. One thing new I have brought to you and that is a determination to open up this question in a way that will break the lethargy that seems to surround it.

I want to tell you that I believe that I can prove that taking old trucks in trade at excess values is dishonest. Also that the man who takes them at excess values is dishonest. I said I thought I could prove it. Let's see whether I can.

To take the dishonest owner of junk, known to be unfit for use, and encourage him into dishonesty is poor citizenship, and the person who so encourages him is as culpable as he. Jim may put over his big deal and hurry home to tell Susie that he has $16,000 of new commissions in bank; whereupon Susie will yelp for a new car and Jim will insist that no man ever drove a finer motor. Then Susie will tell of Harold and Jessie having a new Sintex with perfectly lovely elephant's breath leather that is so polished that you can hardly sit on it. And Jim tosses the sponge into the ring and Susie gets a new car, while a perfectly good passenger car, with a matchless motor, is offered for sale. No Susie ever yelped for Jim to get a new truck. Susie's particular interest in Jim's trucks is the coin that can be made out of them.

Most Traded Trucks Should Be Destroyed.

Perhaps one per cent. of truck trades are turned in because they are too small or in other ways unsuited. I do not hesitate to say that at least 95 per cent. of trucks traded in should be destroyed. Now, when Ignatz Irishwhiskey noses around the dump heaps and picks up an old Adam chassis with an Eve body, for which he pays $100 or $200, and trundles it into his side yard, demanding $800 or $1000 for it in trade, he is dishonest. When any dealer who knows he is alive and at the same time is wise to what is being put over on him, allows Ignatz to do it, he, too, is dishonest, because he is contributing to the world's store of dishonesty. He is doing nothing to make the situation better. When the dealer is a mutt and thinks he is getting 25 per cent. discount, and mentally calculates that he will allow $800 and afterwards spend $100 to make it run and thereafter get $500 for it, leaving a loss of $400, which can easily be absorbed by the $700 represented by his 25 per cent., he is unfit to be in business.

A Universal truck owned in a large city in Connecticut was used as trade-in after the Universal had gone out of production. In the first instance of which I know it was traded in at $800. Afterward it was sold by that dealer for $350. Two months later it was traded to another dealer for $750, and later sold by him for $300. Within two weeks it was traded back to the dealer who sold it in the last instance at $700, and if my memory serves me correctly, it was sold again and again traded in. In New York City an old piece of junk was sold by a dealer at $350. Within a very short time it was offered by the purchaser as a trade-in at $600 to the dealer who had sold it to him.

Many Do Not Know Business Principles.

It is one of our burdens that we are doing much business with men who have come up from shop experience and now have entered business. These men, in many instances, know nothing of overhead, depreciation, etc., and do not know that instead of making 25 per cent., they are probably making six per cent. or seven per cent. Now, when we encourage them in their ignorance and thus further unwise trading, we, too, are adding to the world's store of dishonesty by permitting it. I use the word "permitting," because I know we can prevent it.

Piano men burn old pianos and sell new ones. Printing press manufacturers use a sledge on vital parts and destroy trade-ins. Just take a look at that single thought. See what a bunch of semi-intelligent business men we have been. We have been encouraging dishonest and unwise practises in order that we might fail to sell as many trucks as we might sell if we were as intelligent as piano men and printing press men. Do you imagine that the houses of Steinway, Knabe, Sterling, Shoninger, as well as the press manufacturers, have builded their immense businesses by permitting the very warp and woof of their business fabric to be cut through with the tools of unwisdom and dishonesty? Their men are in an industry older than ours, and you may be certain that their credit departments would not permit their distributors to render themselves unfit to pay bills, and at the same time undermine the industry, making it unfit for decent men. If we had put this subject under a glass—under the microscope of judgment—and given it the cold scrutiny that an insurance actuary gives to his risks, we would have discontinued these unwise practises long, long since.

Few Dealers Survive Trading.

In a recent meeting of motor truck dealers in New York City, there were approximately 35 present. A speaker at the meeting asked those to rise who had been in the business in the City of New York continuously for two years or more. Four men rose. Very many less than 50 per cent. of the motor truck dealers of New York City have endured as agents for the same product for two years or more. Failure after failure has characterized the attempt to sell motor trucks in New York City, and practically every failure recorded in the industry is due to the trade-in evil. Now do not assume that the word "practically" is a modification of the fact. In order to hit it harder let me tell you that fully 99 per cent. of the failures in the motor truck industry in New York City have been due to unwise trades.

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It has been the practise of the manufacturers to appoint any kind of a dealer. The idea was to sell trucks. I know of a case in a large city in the East where the dealer in question sold about 400 motor trucks in a year. No junk too bad for him to take at an excess value. He ran riot for several years and went the way where such practises inevitably lead. If the factory he represented has secured a successor to him, the successor must, in the very nature of things, be of a caliber willing to follow such a situation; and unquestionably the service rendered the ultimate consumers is poorer now than it was under his regime—if such be possible. The ultimate result of this means riotous iniquity and dissatisfied users. Was he to blame? He was not! We are to blame! I say "are" to blame because we continue to encourage such practises. Wholly regardless of our conscientious scruples, it is unwise and an unintelligent conduct of the interests in our keeping to continue such practises.

Have Not Stabilized Business.

Do you want to know what the trouble with our business is? We haven't stabilized it. We haven't made it like hats and caps, boots and shoes, pianos, printing presses, etc., and also I know why we have not stabilized it. We have not stabilized because we have not realized. If we were to realize that about the time numerous states were legislating the horse race game out of existence, the automobile business was coming into existence, and the automobile business was immediately over run by race horse touts.

I do not say that intentional dishonest practises survive, even in the motor industry, but I do say that race horse atmosphere permeated the motor industry and some of the practises still endure under the name of "motor practise." To illustrate: One of the most honest men I ever knew filled an order for a new motor with a rebuilt motor which looked as good as new. His defense was that it was "motor practise." Now please understand that this man is 100 per cent. honest, but he has yielded to the atmosphere that permeates our business.

I am here to tell you that our industry needs not only to be honest, but to be rigidly honest, because it has a bad reputation to live down; and I am perfectly frank in saying that I do not want to touch the flesh of a man who is going to tear this industry down by constant recurrence to trickery. Dishonest tradeins are trickery; a means to the end of cutting prices, and are predicated on the belief that old junk can be sold to some unsuspecting victim. In other words, we are gold brick men when we do such things. We are then selling something we know to be dishonest. I feel I must make this plea for honesty—rigid honesty—scrupulous honesty—unpleasant honesty, if need be. I would rather be called a snob than a thief.

Actual Valuation of Truck Possible.

Yes, I can tell you what all this has to do with eliminating the "Trade-in Evil," and I can propose a plan to eliminate it, but the plan isn't worth a whoop unless you men waken up and enforce it. Take it and develop it. I said "develop," not modify. I do not want it modified. I do not stand for diluted honesty.

This is my proposal: Take any trade at what it is worth. If it has worm parts, or gear parts, or engine parts, or anything else in it sufficiently good to be used in repair jobs on old trucks, take it over and disassemble it. Put the parts into sacks and label them. Fix the value of good second hand parts in a parts catalog to which we can all agree. Tell Mr. Retailer that in the second hand parts catalog will be found the value of second hand trucks, and if the old junk contains $300 in usable parts, that amount is what we will give for it. Then call up the original seller of that truck, or communicate with the factory that made it, and demand, and get, $300 for those good and usable repair parts. At that time the original seller may say that he has $400 of the other dealer's parts and ask for a check for the difference. Thereupon the Clearing House is at work.

Disposes of Old Trucks.

Consider this, gentlemen. By such means an old truck has now gone out of existence, and inevitably it must be replaced by a new one. What is your business, junk or chassis? Now don't laugh! I didn't mean anything personal by that. Seriously, perhaps every truck is as good as its time and as good as its price.

Now you want to know how we are going to enforce this. By "gentlemen's agreement?" Gentlemen, the years have cavorted over the top of my head and worn it shiny. By processes of induction, if not by processes of intelligence, I have gathered some things which I am pleased to call knowledge. Listed under the numeral "One" is the knowledge that "gentlemen's agreements" are idle. The day is coming when they may be useful, but I don't believe it is here now.

I propose the enforcement of this plan—and I use the word "enforcement" because I mean enforcement—through our several credit departments. I suggest that our credit department write to our various dealers and distributors and offer them some of their fatherly care—you know how fathers "offer" their care? Frankly tell them that very many men miscalculate their profits, that they think the profits more than they can be after expenses of every nature have been paid. Offer them a series of simple lessons on credit, on safe procedure and various other fundamentals necessary to successful business, and embody it all in a series of simple language essays on these several topics. At the same time advise them that a new contract form has been adopted and a new clause is now arbitrarily read into all contracts. Have it read something like this: (Assuming that the first party is designated as the "Manufacturer" and the second party is designated as "Distributor.")

A Suggested Distributor's Contract.

"The manufacturer does by this instrument agree that he will keep the distributor fully informed of the market prices of second hand motor truck parts as evidenced by a second hand parts catalog issued by the manufacturer, and subsequent supplements, and the manufacturer will require that values of all trades of old trucks shall be calculated as usable parts. The manufacturer agrees that if the nearest distributor of (the named truck) cannot at the time use such returned parts, that the manufacturer will find a market for such at the valuations officially established. It is recognized by both parties hereto that the basic principle of good business is to buy at value and sell at value, and the distributor does by this contract bind himself to purchase second hand trucks at actual value. As an evidence of continued safe and honest policy in this regard, he does by this instrument bind himself to furnish a monthly financial statement of his business affairs in the interest of continued safe conduct of the manufacturer's sales and in his own behalf."

You may say this is crude and I may agree, but I have evolved a feasible plan, made up of basic, sound principles, which are being applied in other lines of endeavor. There is no occasion to mince words. I propose to enforce safe and honest business methods upon dealers by having the iron hand of the credit departments upon their collars all of the time.

We should take these principles and develop them for the sake of our trade. We can do this if we want to and if we don't want to we should stand up like men and say we don't want to. Whereupon some of us will quit the industry. Those of us who cannot be bright have recourse to simplicity, and nothing is more simple than honesty and nothing is more dishonest than to encourage lame mentalities into practises that weigh against the business fabric as well as the moral fabric of our nation. No man has a semblance of a right to do such things and we as high thinking men, looking down upon the mental processes of the clod, are in duty bound to take every possible step toward cleaning house in the motor truck industry. There is nothing more rotten, sore, putrid, with bad morals, than this trade-in practise. Who says it is business but confesses his lack of knowledge of the term? It is no more business than "booze" is business. It is inherently, basically, characteristically, dishonest. The opposite of dishonesty is honesty. The opposite of dishonest trade-ins is at least, tradeins at honest value.

I have laid my plan before you and you are going to ask me questions if you wish to. If you ask me any questions about it, please remember that you know as much about it as I do; the great big factor in its discussion and fruition is that it is not alone feasible—it is simple. Let me repeat, that to eliminate the trade-in evil is a very simple thing.

I now propose that your organization appoint a committee to immediately take up this plan to evolve from it a plan which shall be agreeable to the manufacturers represented in this organization, and to secure volunteers who will take the step toward saving the motor truck business.

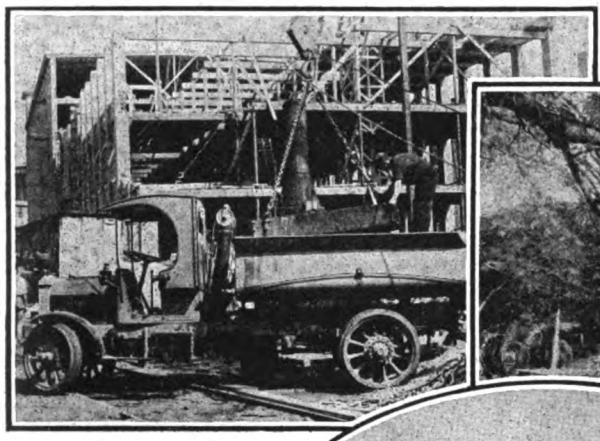
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Transportation Is the Key to Bigger Business

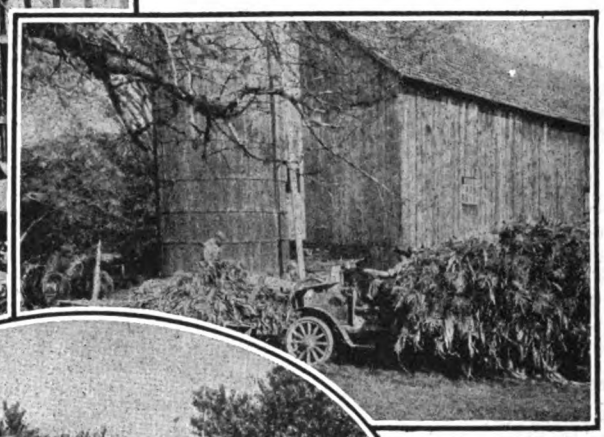
AMERICAN business is expanding at a tremendous rate. Small manufacturing and mercantile concerns—some of them established, it seems, but yesterday, and others which have gone along without marked progress for many years—have within the space of months grown to substantial proportions, reflecting the prosperity of the entire nation.

In this progress the motor truck has done its full part. In fact, the economic value of the motor truck has been a most important factor in the prosperity of the country and in the individual progress of various businesses and business men.

There are many specific instances today which can be cited to show where the motor truck saved this **mining business from ruin, and that department store enterprise from stagnation; in which this wholesale packing business, or furniture business or cartage business, has been saved thousands of dollars annually by the use of the motor truck, and in which scores of *kinds* of businesses have been enabled to expand more** quickly and more economically.



Build faster--and Federals answer the call--on the job--morning till night, never tiring. This one is also an American Woolen Mills truck.



The use of a motor truck and trailer around the farm does not necessarily mean the entire elimination of the horse.



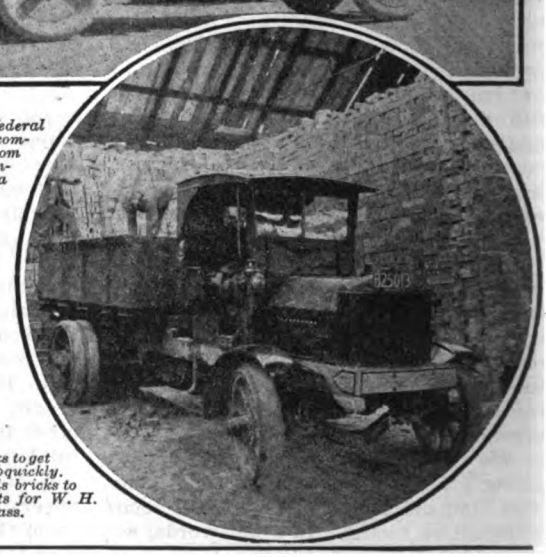
The Sochelle Peach Ranch in North Yakima, Wash., sends 406 cases of peaches eight miles to the railroad in this two ton Federal. Fruit must be marketed quickly.

The American Woolen Mills Company, using Federal Trucks in various activities, finds its work speeded up and expansion that otherwise would be seriously hindered proceeding with unabated speed because of the assistance of the motor truck. In these groups are shown two American Woolen Mills Trucks—one engaged in haulage, and the other in factory building.

All divisions of the automotive industry are moving faster these days than ever before, and the Federal truck is contributing its share toward supplying the transportation needs of the nation by serving motor car and accessory manufactures, as well as directly. On these pages are shown two examples,—a Federal hauling piston rings for the McQuay-



This New Sturdy Federal one ton had just completed a long run from Detroit to Uniontown, Pennsylvania



Builders use trucks to get materials on the job quickly. This Federal hauls bricks to build new projects for W. H. Main, Malden, Mass.

Statistics on the Motor Truck Industry

Trucks produced in 1903 to 1910 -	9,828
Trucks produced in 1911 - -	10,655
Trucks produced in 1918 - -	210,100
Trucks produced in 1919 - -	350,000
Total Number of Trucks estimated to be in the United States at the present day - - - - -	600,000
Estimated Number of Motor Trucks to be manufactured in 1920 - -	350,000

This figure based upon the known demand for trucks taken in connection with the fact that shortage of steel and other manufacturing difficulties will probably keep production below what it would otherwise be.

FEDERAL

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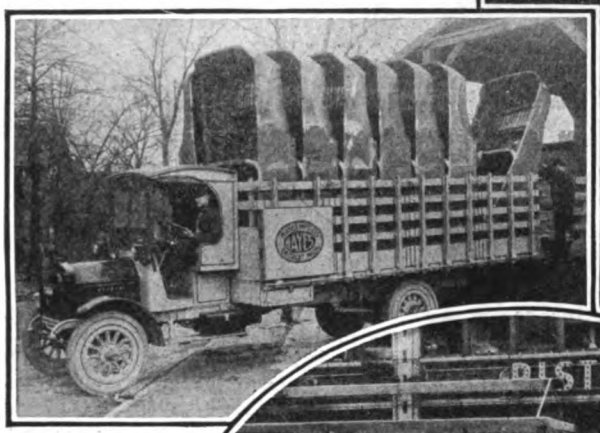
The Motor Truck Is the World's Moving Van

Norris Manufacturing Company, piston ring manufacturers, and another hauling automobile bodies produced by the Hayes Manufacturing Company, of Detroit, Mich. It is a suggestive commentary on the Federal truck, that so many of them are purchased by motor car and accessory manufacturers, who are "motor wise".

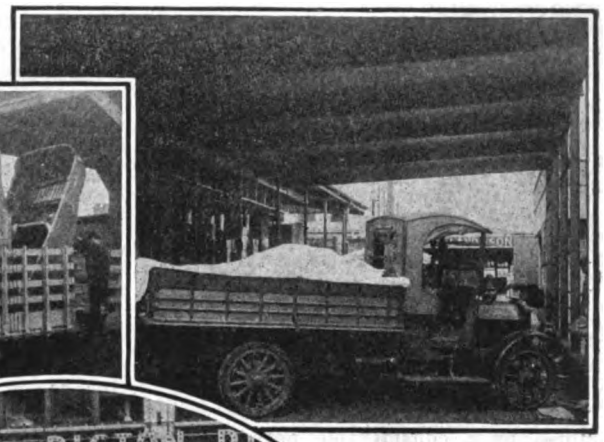
You will find the Federal in the service of Standard Oil Co., The Express Companies, The American Woolen Mills Company, and other great business houses such as Armour & Co.,with its corps of scientific purchasing experts, and also the choice of the small

From woolen goods and automotive manufacturing to agriculture is a long jump, but here we also have scenes of what the Federal is doing for the rancher in the West and the farmer in the Middle West. Silo filling is fast work when the farmer has the use of a truck to hurry the ensilage to the cutter, while the proprietor of the Sochelle Peach Ranch in North Yakima, Wash., can attest that the Federal is saving him money, for with the truck seen here he can send 406 cases of peaches eight miles to the railroad,—an important feature when it is considered that fruit must be marketed quickly

In every field in which the motor truck has been proved a money maker—an economic factor — you will find the **Federal** truck well in the lead,—both numerically and in performance.



The automobile Industry of America has amazed the world with its volume. The Hayes Mfg. Co. uses Federals to speed deliveries.



The big packers are conservers of everything that goes on hoofs. They also must save time in each manufacturing operation. Federals help Armour to keep down cost.



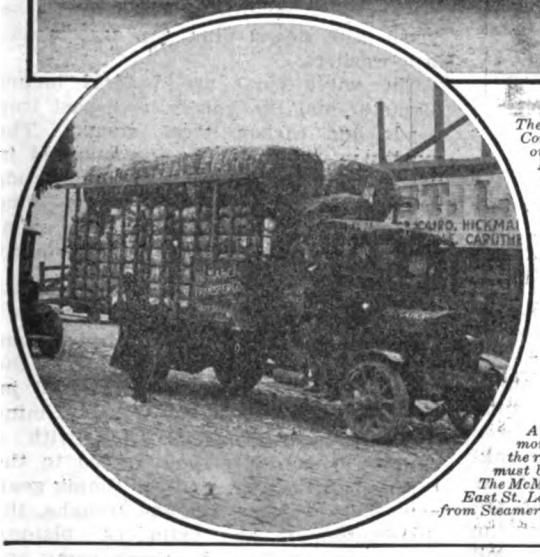
Another Federal in the business of Speeding Automobile parts. The McQuay Norris Company is well known as the Piston Ring Manufacturer



business man and the farmer, who bases his purchase on *what people say about the Federal* as well as on its general reputation and his own shrewdness of judgment.

One of the facts of the Federal business which Federal officials and Federal dealers value most, is this expression which many times drops casually from the lips of persons who have no axe to grind: "The Federal is a good truck".

Federal Motor Truck Company
00 Federal Ave. Detroit, Mich.



The American Woolen Company in itsnumerous mills uses many Federals as a means of starting finished product on its way and hurrying in raw materials.

America furnishes more cotton than all the rest of the world. It must be handled quickly. The McMahon Transfer Co., East St. Louis, takes the bales from Steamer to Mill.

"Shorten the Miles to Market"

One of the most important problems of the rural districts is transportation,—the shortening of the time distance between the farm and the market, and the small town and the railroad center. If the people of the world are to be fed, if the agriculturist is to receive adequate return for his endeavors, if the small town merchant is to prosper,—then we must "Shorten the Miles to Market".

"Shorten the Miles to Market" is both a slogan and the name of a new and to the agriculturist a vitally interesting booklet citing case after case in which truck users —farmers, dairymen, orchardists, stock raisers, and others —have made trucks earn big money for them and allowed them to expand their farm business. Send a card with your name and address and the booklet will come to you by return mail.

ONE TO FIVE TON TRUCKS

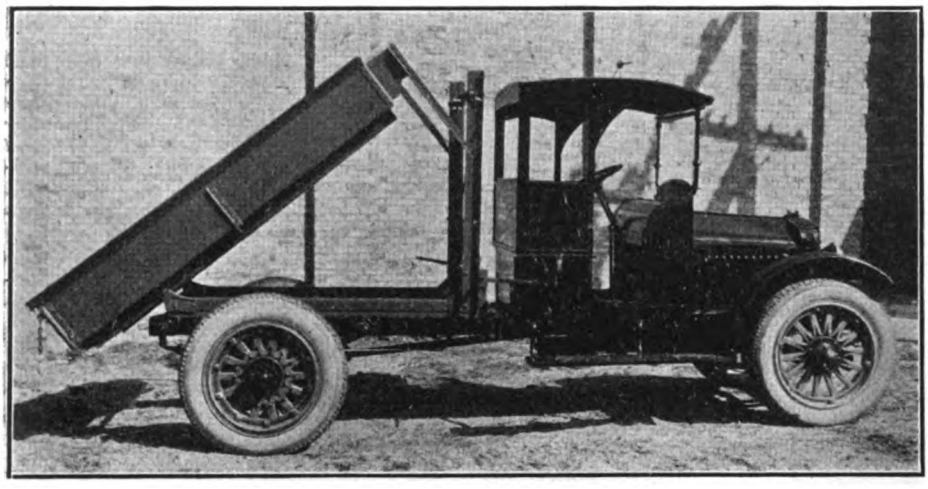
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NAPOLEON TRUCKS, MODELS 9 AND 11

THE Napoleon Motors Co., Traverse City, Mich., which is now operating its plant for the production of trucks, produces two sizes of chassis, these being rated at 2000 and 3000 pounds load capacities, which are identified as models 9 and 11 respectively.

The machines are constructed to what may be termed to be conventional design and practise and from what are recognized as standard units by the industry, that are produced by specialists and have been developed by long engineering and manufacturing experience. The object of the company is to standardize so far as possible and there is comparatively little difference in the dimensions of the units. By this standardization of production the concern produces largely with its factory equipment and a quality of product that is claimed to be extremely high is insured.

The design of the trucks was determined by a considerable period of experiment and service observation, and claim is made that the machines have all



Model 11 Napoleon Truck Chassis, Equipped with a Driver's Cab and a Power-Hoisting, End-Discharging Body.

that is desirable in simplification, accessibility and economy. The construction units were selected after careful test and the details of assembly were worked out so as to obtain a very satisfactory endurance.

Frame a Special Reinforced Type.

The only unit that differs with what is known as standard design is the frame, which has two members at either side instead of one, the reinforcing or secondary members extending the entire length from points just back of the engine support arms to the rear cross member. The main frame is necked from the rear of the driver's seat so that the secondary members are practically a continuation of the lines of the forward end of the main frame back to the rear end.

The secondary frame is reinforced by the brake shaft, but at the ends of the rear springs are cross members, which are riveted to wide plates that extend across both frame members, and at the rear member square plates are riveted to both side members. This makes a very strong construction under the body, and the frame is especially well protected against stresses from spring deflection and reflexion.

At the forward end of the frame there is a cross member that carries the engine and supports the radiator, and there is a wide cross member that is secured with large gusset plates that extends beyond the side members and serves as a bumper, effectually protecting the radiator from striking any object, and, if moving head-on, preventing contact of the fenders.

Gray Victory Engine in Power Plant.

The unit power plant consists of a Gray Victory engine, designed for truck or tractor service, combined with a Fuller dry multiple disc clutch and a Fuller sliding gear transmission gearset. The engine is a four-cylinder, four-cycle, water cooled, vertical I-head type, having cylinder bore of 3½ inches and stroke of five inches, that is rated by the S. A. E. formula at 19.60 horsepower, but is claimed by the maker will develop 34.60 horsepower at 1800 revolutions a minute. The cylinders are cast en bloc with the water jacket and the upper half of the crankcase integral, and the cylinder block head is a separate unit. It is generously water jacketed.

The cylinder block is cast with a vertical transverse web dividing the crankcase section, this carrying the center main bearing. The cylinders are offset to minimize side thrust of the pistons during the compression and power strokes. The lower section of the crankcase is cast from the same material as the cylinders. A steel pan in which are the oil troughs forms the base of the crank chamber and the top of the oil reservoir. Forward and rear extensions form the housing for the timing gearset and the bell that encloses the flywheel.

Fuel Is Twice Pre-Heated.

The design of the head is cored for two intake passages, so that there are two "hot spots" that heat the fuel, and the combination intake and exhaust manifold is designed with a "hot spot," so that the fuel is twice increased in temperature before entering the cylinders. The head is secured by a series of heat treated studs and nuts. The pistons are designed to insure against deformation and are fitted with three diagonally split rings.

The crankshaft is a three-journal type, drop forged from special steel, with the flywheel flange integral. The journals are 2¾, two and 3⅜ inches length, a total length of 8⅛ inches bearing surface, and the journals are two inches diameter. The camshaft is a special steel drop forging 15/16 inch diameter, with the cams integral, that is case hardened and ground. It also has an integral cam that operates the plunger of the oil pump. The connecting rods are heat treated drop forged I sections.

Bearings and Other Engine Detail.

The main and connecting rod bearings are die cast babbitt seated in bronze cages. The main bearing caps are malleable iron set into the cylinder block, retained by heat treated studs and castle nuts and cotter pins. The crankpins are 1¾ inches diameter and the bearings are die cast babbitt, fitted with shims and secured by nickel steel bolts, castle nuts and cotter pins. The camshaft bearings are cast iron, integral with the cylinder block. The wristpins are hardened and ground steel tube secured in the piston bosses by set screws. The small ends of the connecting rods that oscillate on these pins are bronze bushed.

The timing gearset gears are helical cut, are large diameter and have ⅞ inch faces. The timing gearset case cover is flanged for attaching the governor drive. It is malleable iron and carries the heavy trunnion on which the forward end of the engine is mounted. The cover is secured with dowel pins, cap screws and lock washers.

The valve ports are 1 21/32 inches diameter and the valves have cast iron heads and carbon steel stems. The mushroom type tappets are mounted in long renewable guides. The push rods are adjustable at the upper ends. The rocker arms are mounted on the cylinder head and are enclosed by a cover retained by studs and nuts.

Lubricating and Cooling Systems.

The engine is lubricated by a combination pressure and splash system, the oil being drawn through a screened intake in the reservoir by a self-priming plunger pump that is fitted with a double check valve, and forced to the three main bearings and the timing gearset. The overflow fills the troughs, the distribution to the cylinders, pistons, wristpins, camshaft bearings, cams and valve tappets being by splash of the connecting rod big ends. The excess oil drains to the reservoir. The oil reservoir will hold five quarts and an indicator shows the level, but when the gauge indicates empty there is sufficient oil remaining in the reservoir to drive several miles.

The engine is cooled by a thermo-syphon circulation of water through the

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cylinder jackets and a large tubular cored radiator, this type being standard with trucks built for the United States army. Radiation is supplemented by a large fan mounted on an adjustable malleable iron bracket on a large bearing, that is driven by a flat belt from a pulley on the forward extension of the magneto shaft. The radiator is protected by a heavy guard frame having five vertical bars spaced equally. The engine is fitted with a generator for charging a Willard battery that supplies current for ignition and for lighting.

Power Transmission System.

The clutch and the transmission gearset are a Fuller unit, the clutch being a dry multiple disc type and the gearset a selective sliding gear design having three forward speed ratios and reverse. Asbestos rings between the clutch plates are the only parts that wear, and the throw-out bearing is all that requires lubrication. The clutch is self-compensating. The studs are heat treated nickel steel and the discs are heat treated. The gearset shafts are chrome nickel steel, large of diameter and hardened and ground. The main shaft is a four-spline type, 1⅞ inches over the keys. The gears are 3½ per cent. nickel steel. The control and emergency brake levers are mounted in a tower on the gearset cover. The control is a ball and socket type with positive interlock.

The power is transmitted through a tubular shaft with a universal joint at either end, that is coupled to the pinion shaft of a Clark internal gear driven axle. A large diameter round section dead axle, with vanadium steel spindles, carries the load and forward of this, mounted on the axle and in the brake flanges, is the housing of the jackshaft. All the gears of the differential gearset are chrome nickel steel and the gearset and the axle shafts are mounted on long roller bearings. The pinions on the ends of the jackshaft shafts mesh with internal gears bolted to the wheels, and these are enclosed in housings that are packed with lubricant. The front axle is a heavy I section drop forging, with the wheel spindles fitted with roller bearings.

Spring Suspension and Control.

The frame is suspended on semi-elliptic springs, the forward set 36 inches long with eight leaves and the rear set 46 inches long, with 12 leaves for the model 9 and 14 leaves for the model 11 chassis. The wheels are wood, artillery type, shod with 32 by 3½ inch solid tires forward and 32 by four-inch tires rear for the model 9 chassis, and 34 by 3½ inch tires forward and 34 by five-inch tires rear for the model 11 chassis. When desired the wheels are equipped with pneumatic cord tires as an extra.

The steering gear is located at the left side and the control is by foot pedals for the clutch and service brake, ignition and throttle levers on the steering wheel, and hand levers for shifting gears and the emergency brake. The service brake shoes contract on drums on the rear wheels, and the emergency brake shoe contracts on a large drum on the main shaft directly back of the transmission gearset.

The chassis are equipped with driver's seat, front fenders and running boards (rear fenders with express body only), electric head and tail lamps, electric horn, jack and tool kit. When ordered convertible all-weather type cabs may be added, and the stock bodies installed include standard express, standard express with top and side curtains, New York type stake, Cincinnati type stake, convertible farm and platform with stock racks. The chassis are listed at $1385 and $1660 f. o. b. Traverse City.

ACME SERIES OF FIVE SIZES OF TRUCKS.

At the coming New York and Chicago shows a full series of trucks will be exhibited by the Acme Motor Truck Co., Cadillac, Mich., which consists of five sizes by load capacity. In the accompanying illustration is shown a line-up of the units that will be exhibited, made when the chassis were equipped at the factory.

As will be noted the trucks are shown in the order of load rating from left to right. These machines are as seen model B, capacity one ton, equipped with an Acme standard express body finished in natural wood; model F, capacity 1½ tons, equipped with an Acme farm body finished in natural wood; model A, two tons, equipped with a standard stake body; model C, 3½ tons, equipped with an all-steel combination body designed for hauling gravel; model E, five tons, equipped with an all-steel coal body.

The trucks are all fitted with cabs and the two larger sizes have hydraulic hoists.

REYNOLDS SERIES OF FOUR TRUCK CHASSIS.

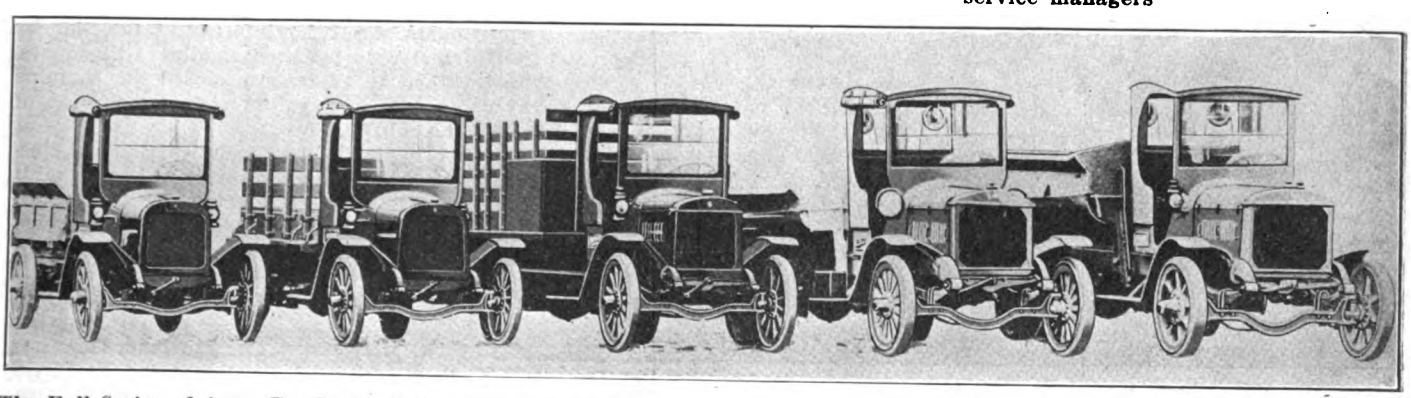
The Reynolds Motor Truck Co., Mount Clemens, Mich., of which Charles E. Stone is vice president in charge of sales and advertising, will build four sizes of truck chassis, which are rated at 1½, 2½, 3½ and five tons load capacity. These trucks are to be built to a standardized design and will vary only in parts dimensions.

These will have wheelbases of 144, 152, 165 and 165 inches respectively. The engines will be Hinkley, built with bore of four inches and stroke of 5½ inches, bore of 4¼ inches and stroke of 5½ inches, and bore of 4½ inches and stroke of 5½ inches respectively, the 3½ and five-ton chassis having the same size engine. These engines are rated at 25.60, 28.90 and 32.40 in order of size by the S. A. E. formula. Claim is made that they will develop 42.50, 45 and 54 horsepower. The engines are lubricated by pressure feed to all bearings, and they are cooled by centrifugal pumps which circulate water through the engine jackets and the helical finned vertical tube radiators.

The engines are equipped with Hinkley centrifugal type governors, high-tension magnetos with variable spark advance and Stromberg carburetors. Electric starting and lighting equipment is standard of all chassis. The clutch is a dry plate type and the transmission gearset is a selective sliding gear design having four forward speed ratios and reverse, mounted amidships at three points. The rear axle is a standard worm shaft and worm wheel construction.

The frame is rolled steel channel section, heat treated, that is suspended on semi-elliptic springs, and the front axle is an I section steel drop forging. The steering gear is at the left side, but is placed at the right for export or special order. The two sets of brakes are internal expanding within drums on the rear wheels. The wheels are cast, with hollow spokes. These are shod with solid band tires, 36 by 3½ and 36 by six for the 1½-ton chassis; 36 by four and 36 by eight for the 2½-ton chassis; 36 by five and 36 by five dual for the 3½-ton chassis, and 36 by six and 40 by six dual for the five-ton chassis.

The Newark Automotive Service Association has been organized at Newark, N. J., with a charter membership of 15 service managers



The Full Series of Acme Trucks, in Order from Left to Right Being Model B, One Ton; Model F, 1½ Tons; Model A, Two Tons; Model C, 3½ Tons, and Model E, Five Tons.

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GRAHAM BROS. 1½-TON FARM TRUCK

GRAHAM BROS., Evansville, Ind., a concern that has been engaged in the automotive industry for several years, is now producing commercially three units that are intended to meet practically all the requirements of those who carry on farm operations with power. These are a truck, a tractor and a power cultivator, the last mentioned machine being so designed that it may be converted into a light tractor.

The object of the company is to manufacture these units in considerable numbers, assuming that the fact that farm equipment covering a wide range of operations will be attractive to buyers, and another inducement will be the fact that it will be able to afford a service for all machines. which will be more satisfactory to owners than were they compelled to depend upon several sources.

Claim is made by the company that the truck design has been very carefully developed with the view of producing a type that would be economical and have a large measure of endurance.

Graham Bros.' 3000-Pound Truck.

The truck is built especially for farm service and it has a load rating of 3000 pounds and statement is made that it can be driven over any kind of road at speed from 20 to 25 miles an hour. The machine is equipped with pneumatic tires and it has been designed to reduce the weight to minimum and to have all the strength that is necessary to afford long endurance. The weight of the chassis without body or cab is 2950 pounds.

The machine is built with proven construction units that are well known for quality and these include Continental engines, Eisemann magnetos, Stromberg carburetors, Torbensen rear axles, Levine steering gears and Disteel wheels, and the others are equal to these in the opinion of engineers.

Continental Power Plant.

The engine is a Continental, a four-cylinder, water cooled, four-cycle, L-head type with the cylinders cast en bloc. The cylinder bore is 3¾ inches and the stroke five inches, the rating by the S. A. E. formula being 22.50 horsepower. The engine has a three-journal crankshaft, and it is lubricated by a constant lever system maintained by a plunger pump. The oil reservoir has one gallon capacity. The engine is cooled by a thermo syphon circulation of water through the cylinder jacket and a large finned tube radiator, the core of which is removable. The shell of the unit is pressed steel. It is mounted on springs to insure against strains from chassis distortion. Radiation is supplemented by a fan driven by a belt from a magneto extension.

The ignition current is created by an Eisemann high-tension magneto-generator set, and the fuel is supplied through a Stromberg carburetor that is equipped with a hot air stove and a dash air adjustment from a tank having 19 gallons capacity installed under the driver's seat.

Clutch and Transmission Gearset.

The engine and the clutch and transmission gearset are combined to form a unit power plant, which is suspended on three points. The clutch is a multiple disc type that is self-adjusting and requires little attention, and the transmission gearset is a selective sliding gear construction having three forward speed ratios and reverse. The clutch has 11 plates and is built for truck duty. The transmission gearset has large shafts and the gears have wide faces and are heat treated nickel steel. The gear ratios are 1:1 direct, 1.7:1 intermediate, 4:1 low and 3.5:1 reverse.

The drive is through a two-section main shaft having three universal joints, the shaft being supported by a double-row, self-aligning annular ball bearing mounted in a heavy bracket on a frame cross member. The shaft is coupled to the pinion shaft of a Torbensen internal gear drive axle, the load being carried on the I section dead axle and the drive being through a countershaft and pinions to the internal ring gears bolted to the rear wheels. The pinions and gears and the brakes are fully enclosed and protected from abrasives. The gear reduction of the axle is seven to one.

Front Axle Frame and Springs.

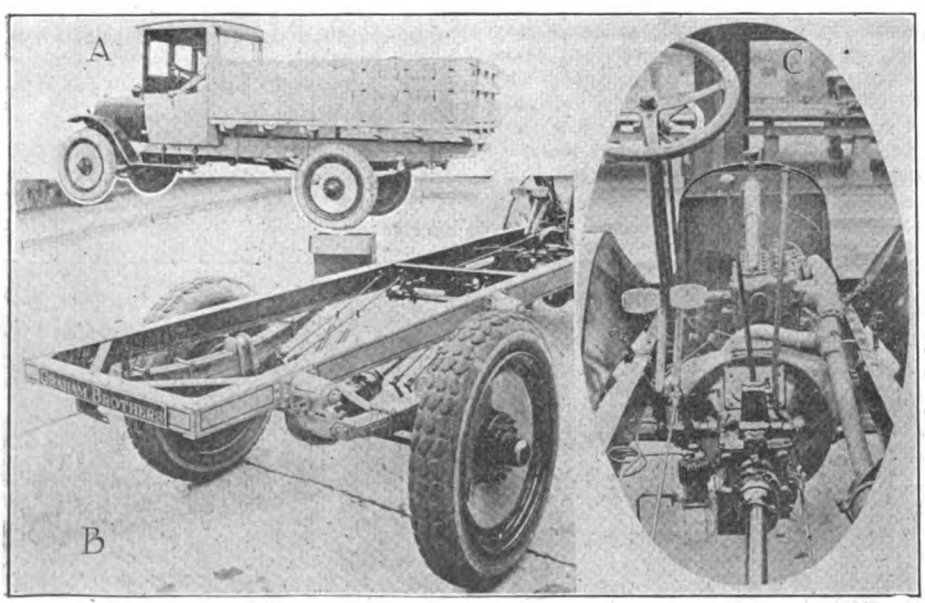
The front axle is a drop forged I-section, with nickel steel steering knuckles and wheel spindles equipped with Timken roller bearings. The frame is a pressed steel channel section five inches width, with webs three inches wide, and necked at the forward end from 33 to 31 inches. The frame is strengthened with cross members and gussets and there is a heavy channel section across the forward end that serves as a bumper. The frame is suspended on semi-elliptic springs, the forward set 42 inches long and 2¼ inches width and nine leaves, and the rear set 52 inches long and three inches wide, with 12 leaves. The rear ends of the springs are shackles and the front eyes of the rear springs are double wrapped. The drive is the Hotchkiss system—through the rear springs, which take the stresses of driving and braking.

The wheels are the Disteel solid pressed steel disc construction and these are shod with 35 by five-inch pneumatic cord tires forward and 36 by six-inch tires of the same type rear. The wheelbase is 136 inches and the tread 56 inches.

The steering gear is a Lavine worm and split nut construction, mounted at the left side, with an 18 inch hand wheel. The control members are all conventional. The service brake has external contracting double-acting shoes operating on drums 15 inches diameter and 2½ inches wide, and the emergency brake has internal expanding shoes that operate on drums 14½ inches diameter and two inches wide.

The cab, when furnished, has a seat that will accommodate three men, equipped with a seven-inch spring cushion with a thick back pad. Both are designed to afford the driver comfort and the windshield is divided so that it may open at either the right or left side. The cab is equipped with side and rear curtains and the forward side curtains on both sides of the cab swing with the doors and are reinforced at the rear by steel rods fastened rigidly to the doors. When the doors are closed the curtains snap under weather strips at the top of the cab.

The equipment includes six-inch electric head lamps, electric tail lamp with license bracket, electric horn, Prest-O-Lite battery, front fenders with aprons, tool box, kit of tools and jack.



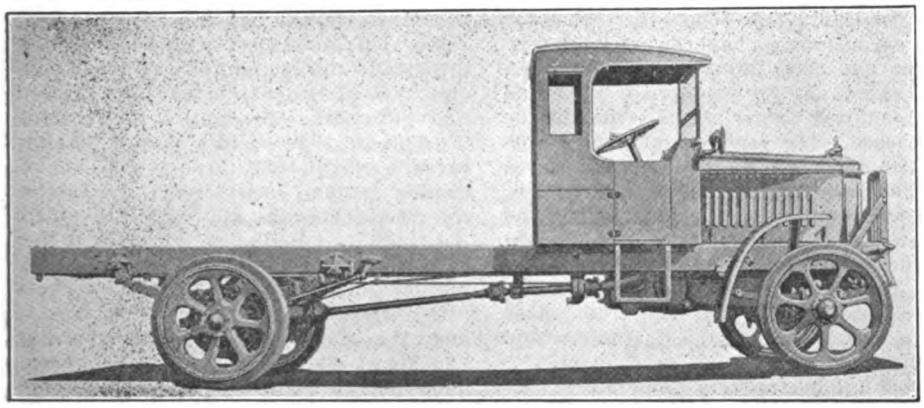
Graham Bros. Farm Truck: A, the Completely Equipped Machine with a Rack Platform Body, Suited for Bulky Loads; B, the Rear Chassis End, Showing the Internal Gear Axle and the Spring Suspension; C, Unit Power Plant, Seen from Amidships.

WILL DISTRIBUTE OLIVER.

R. M. Wade & Co.. Portland, Ore., has been appointed distributor for the Oliver tractor in the states of Washington, Oregon, Idaho and California.

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JUMBO MODEL 35 3½-TON TRUCK



Side View of the Completely Equipped Model 35 3½-Ton Jumbo Truck Chassis, with the All-Steel Driver's Cab, Ready for Body Installation.

CLAIM is made by the Nelson Motor Truck Co., Saginaw, Mich., that it is now producing the first complete series of fully equipped internal gear driven trucks built in America. This series includes the following: Model 15, load capacity 3000 pounds; model 20, load capacity 4000 pounds; model 25S and model 25L (standard and long wheelbase), load capacity 5000 pounds; model 30S and model 30L (standard and long wheelbase), load capacity 6000 pounds; model 35S and model 35L (standard and long wheelbase), load capacity 7000 pounds, and model 40S and model 40L (standard and long wheelbase), load capacity 8000 pounds.

Of this series of Jumbo trucks of which models 20 and 25 were the first, the model 35 is now in production and the model 15 will be built commercially directly after the first of the year. The company has established the policy of building high quality machines and all of these are practically to a single design that differs only in proportion of parts. There is some difference in the construction units in the chassis.

Most Recent Production Is Model 35.

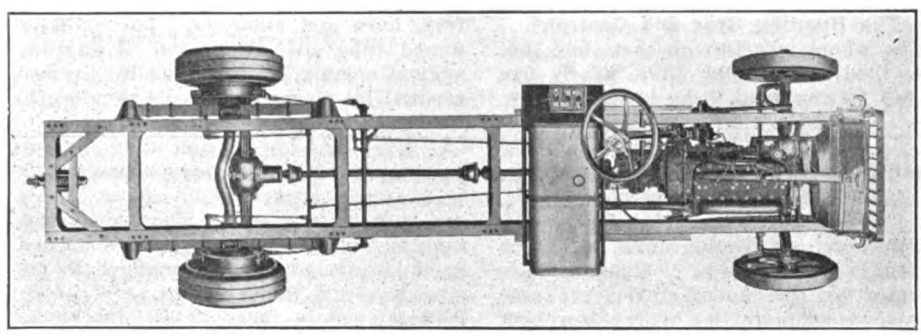
The most recent production is model 35, to which the detail that will be specified will apply. The engine is a Buda model YTU, a four-cylinder, four-cycle, water cooled, L-head type, with cylinder bore of 4½ inches and stroke of six inches, that is rated by the S. A. E. formula at 32.4 horsepower. The cylinders are cast en bloc with the water jacket integral and the head is separable. The crankcase is two sections. The pistons are fitted for four diagonal split rings.

The crankshaft is drop forged with the flywheel flange integral from a special steel alloy and is a three-journal type that is heat treated and ground. The camshaft is drop forged with the cams integral and is case hardened and ground. The engine is lubricated by force feed through a manifold to the main bearings and timing gearset and a drilled crankshaft to the crankpins and tube to the wristpins, through ducts to the camshaft bearings, and the throwoff from the centrifugal movement of the crankshaft distributes lubricant to the cylinder and piston walls, the cams and valve tappets.

Engine Cooling and Auxiliaries.

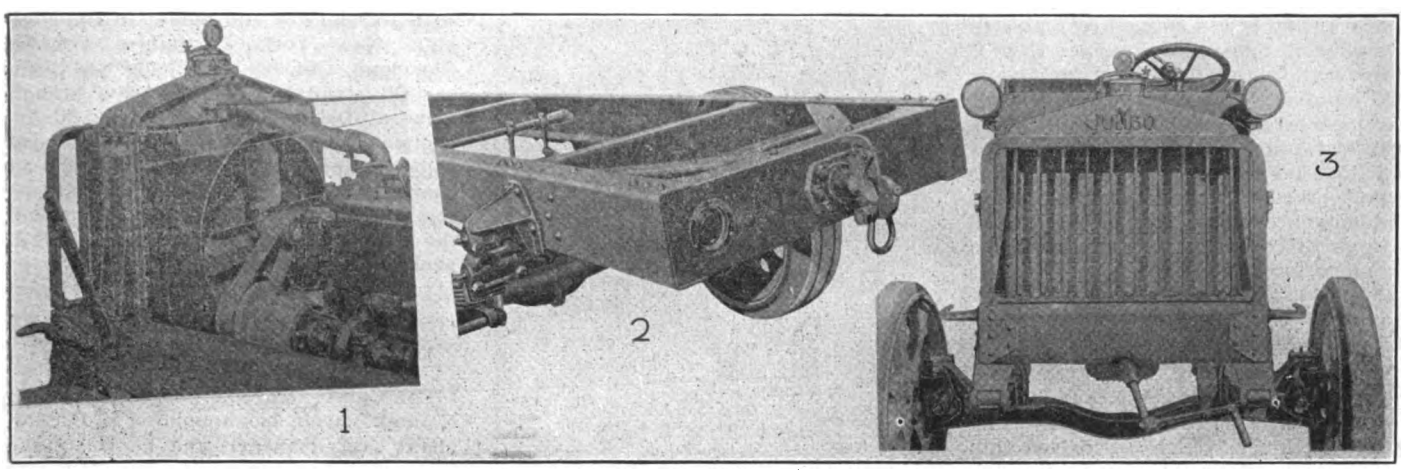
The engine is cooled by a circulation of water through the cylinder jacket by a centrifugal pump and a radiator with a tubular cooling section and cast top and bottom tank, and a circulation of air by a shrouded fan that is driven by a flat belt from a pulley on an extension of the water pump shaft. The radiator is cushioned and supported on springs to protect it against the stresses of chassis distortion and vibratory stresses.

The fuel is supplied by gravity through a Zenith carburetor from a 30-gallon tank under the driver's seat. The ignition current is generated by an Eisemann high-tension magneto equipped with an impulse starter, the control being manually operated. The engine is governed by a Simplex governor, and it is equipped with a generator for supplying current for the electric dash and tail lamps.



Top View of the Jumbo 3½-Ton Truck Chassis, Showing the Power Transmission System and the Clark Internal Gear Drive Rear Axle and the Frame Rear End Reinforcement.

The engine is assembled as a unit power plant with a Fuller dry mutiple disc clutch that is claimed to be self-adjusting and with a Brown-Lipe sliding gear selective type transmission gearset having four forward speed ratios and reverse. The gearset is fitted with a power take-off for a body hoist or winch as regular equipment.



Features of the Jumbo Design; 1, the Radiator Protected by a Guard and Shrouded to Insure High Cooling Efficiency; 2, Rear End of Chassis Frame with the Inset Tail Lamp and the Spring Buffered Drawbar; 3, Front of Chassis, Showing the Radiator Shutter Closed, the Folding Crank and Support, the Ball Bearing Steering Pivots and the Lamps Flush with the Steel Dash.

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The power is transmitted through a Spicer tubular shaft with universal joints to the pinion shaft of the Clark internal gear driven rear axle, this having a round load carrying member and a cast steel housing for the jackshaft that is mounted on brackets and in the brake flanges. The jackshaft pinions and the internal gears are enclosed in housings that are grease tight and exclude dust. The differential gearset is a bevel gear construction and this unit and the jackshaft are mounted on New Departure annular ball and Hyatt roller bearings. The front axle is an I section steel drop forging. The front wheels are fitted with Bock roller bearings and the rear wheels with Hyatt roller bearings.

The frame is constructed of pressed steel channel of heavy section, with heavy cross members and reinforcements, that is suspended on semi-elliptic Perfection springs, the front set being 46 inches long and three inches wide with 10 leaves, and the rear set 62 inches long and 3½ inches wide with 13 leaves. The spring eyes are bushed and fitted with hardened and ground steel bolts and grease cups. The rear springs are pivoted at the forward ends, the driving and braking stresses being absorbed by them.

The Running Gear and Control.

The wheels are Dayton cast steel that are shod with solid tires, 36 by five inches forward and 36 by 10 inches rear. The wheelbase is 165 inches. The steering gear is a Jacox, located at the left side of the chassis, and the control is by the customary foot pedals for the clutch and service brake, hand levers for the ignition and throttle control on the steering wheel, and the emergency brake and gear shifting levers at the center of the footboard. The service brake shoes contract on and the emergency brakes shoes expand within drums on the rear wheels.

The chassis weight is 6400 pounds and when loaded 75 per cent. of the weight of the freight is carried on the rear axle. The road speed is 12 miles an hour. The gear reduction is 1.76:1 on third speed ratio, 3.09:1 on second, 5.35:1 on low and 6.42:1 in reverse.

Equipment Very Complete.

The equipment of the chassis has been very carefully studied and it includes an all-steel driver's cab that is fitted with disappearing curtains that swing with the doors, that has a seat that will accommodate three men comfortably, and has a rain vision windshield set in rubber. The electric equipment consists of a system for lighting the dash and tail lamps and the dash lamps are set flush to insure against breakage (electric starter is fitted as an extra), a generator, battery, horn and ammeter. The radiator finned tube cooling section is guarded against coming into collision by a guard secured by diagonal braces extending to the side members of the frame and the front cross member of the frame is extended to form a bumper that is an additional protection.

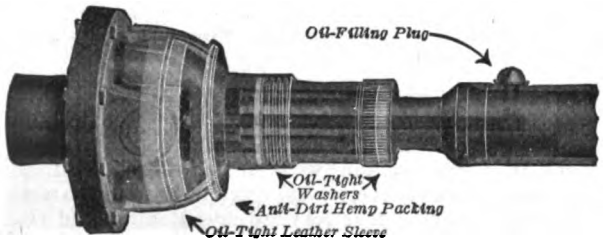
The radiator is fitted with a motometer to indicate the temperature of the water and the equipment includes a shutter that will regulate the draft of air through it. The fan is fitted in a shroud that insures a circulation through the entire cooling section, considerably increasing the efficiency of the radiator. The starting crank is a folding type that will not be broken by contact with an object. On the ends of the frame side members are fitted substantial pigtail towing hooks, and the upper ends of the steering knuckle pivots are mounted in heavy annular ball thrust bearings that minimize wear and contribute to the ease of steering.

At the rear of the frame the tail lamp is inset into the rear cross member to prevent breakage by contact with any object. On the rear cross member is also mounted a spring buffered drawbar for use with a trailer, and the frame at this point is strongly reinforced to prevent distortion under the heavy stresses of towage.

The equipment further includes an electric horn, a hub odometer, a foot form accelerator, fenders, running boards, a jack, a tool kit and a grease gun. The price quoted is $4300 f. o. b. Saginaw.

MERCHANT & EVANS NEW CONSTRUCTION UNITS.

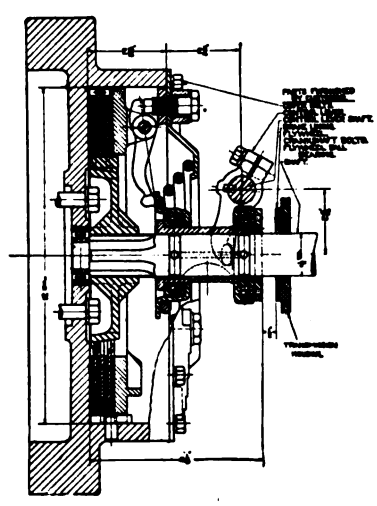
Two new construction units, for which unusual quality and efficiency are claimed by the manufacturer, are now produced commercially by the Merchant & Evans Co., Philadelphia, Pa., which is widely known to the automotive industry as maker of Hele-Shaw clutches, M & E grease cups, etc. This concern claims that a universal joint that is now being produced in quantity is the first "practical and proven oil-retaining universal joint thus far successfully used in power vehicle practise;" that its strength and simplicity are ideal; that it has all the best qualities developed by automotive engineers for war construction, and that inability to get the size and speed of production needed alone prevented its virtual exclusive use by the government.



The Merchant & Evans New Universal Joint Claimed to Have a Perfect Oil-Tight Housing.

The joint consists of two hardened and accurately ground pins, the four ends of which are inserted in four hardened and ground bushings, which are driven into two tough steel drop forgings, a block being inserted between the yokes of these forgings for centering and supporting the pins. Very large bearing surfaces have been designed to reduce the pressures a square inch. These joints are built in four sizes. The accompanying illustration shows the joints enclosed in the housing, which is claimed to positively retain the lubricant.

Statement is that these joints have been given 22,000,000 turns (30,000 vehicle miles) at speeds of 40 to 200 revolutions a minute in summer and winter temperatures, up to angles of 15 degrees plus or minus without change or loss of oil or deterioration of the packing. The oil is retained by the inside leather sleeve. Prompt deliveries of these four standard sizes can be made.



Cross Section of the New M & E Dry Disc Clutch for Unit Power Plant Installation.

The company claims important development in the new M & E dry disc clutches, made in two sizes, known as models 10 and 12, to be used in unit power plant assemblies that are designed for use with any open flywheel and are constructed to fit standard types of S. A. E. bell housings.

The very light main spring pressure is multiplied by three levers on the discs, which have friction surfaces. The adjustment is very simple and is made by a unique arrangement of steps on the cover plate. The machine work of these units is to the high standards established for the production of war work, and the design is such that wear is minimized and long life and high efficiency is assured.

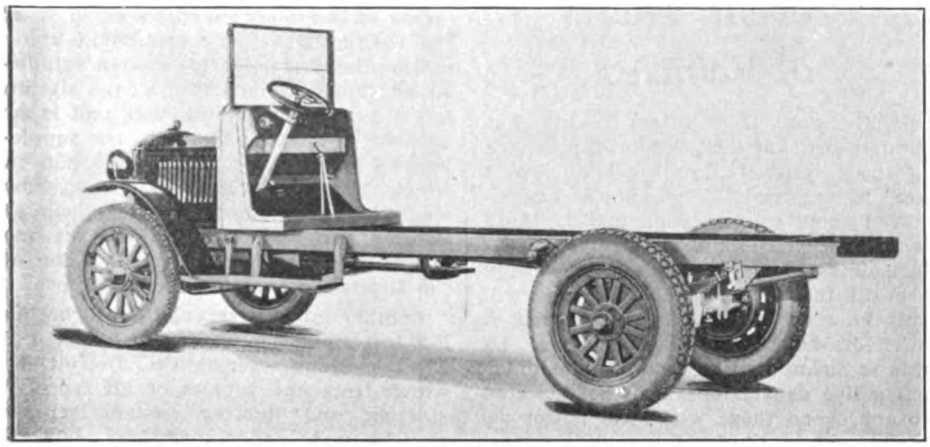
The company now has plants at Philadelphia, Warwood, W. Va., and Chicago, with warehouses and offices in Philadelphia, New York, Baltimore, Atlanta, Cleveland, Chicago, St. Louis and Kansas City, and has established a branch office at Detroit, with a mechanical department in charge of an experienced sales engineer. A sales engineer is in charge of the mechanical department at the Chicago office. The main office and the principal engineering staff is at Philadelphia.

MERCHANT IS NEW COVERT SALES MANAGER.

The Covert Gear Co, Inc., Lockport, N. Y., and Detroit, has appointed R. C. Merchant sales manager, and he will make headquarters at Detroit. Mr. Merchant has been connected with the company for a considerable period in the sales and engineering departments.

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DUPLEX "LIMITED" TWO-TON TRUCK



New Two-Ton Worm-Driven Duplex "Limited" Truck Chassis, Designed for Fast Driving with Pneumatic Tire Equipment.

THE Duplex Truck Co., Lansing, Mich., which claims to be the builder of the first four-wheel driven truck, which has built this type exclusively for more than 10 years, is now about to produce commercially a two-wheel worm shaft and worm wheel driven machine which is claimed to be designed for higher speed than other power vehicles of the same rating.

The company states that the chassis, which is rated at two tons load capacity and is known as the Duplex Limited, has been in development for three years and it has been designed and constructed to endure the stresses to which it will be subject in fast driving with what is specified as medium freights.

Emphasis is made that this is not a truck designed for slow haulage and adapted for faster speed by gear ratios. The company maintains that it is a type developed by careful investigation and experiment. Nothing radical enters into the design and the engineering has been proven by the engineering experience of the automotive industry.

Engine a Modified Class B Type.

The engine is a four-cylinder, four-cycle, water cooled, L-head, vertical type, a modification of the so called class B engine designed for construction of trucks for United States army transport, with separable head. The cylinders are cast en bloc. The cylinder bore is four inches and the stroke 5¼ inches, the rating by the S. A. E. formula being 25.60 horsepower, and claim is made that engine will develop considerably in excess of its rated power at normal speed. The engine is cooled by a circulation of water forced by a centrifugal pump through the cylinder jacket and a special Duplex design radiator with cast tanks and finned head. The core of the radiator is a Spirex construction. Radiation is promoted by an 18-inch fan driven by a two-inch flat leather belt.

The engine is lubricated by a combination force feed and splash system. The engine, clutch and transmission gearset is combined in a unit power plant that is supported at three points. The fuel is supplied through a Stromberg carburetor from a gasoline tank of 18 gallons capacity located under the cowl of the dash. The engine is equipped with a Westinghouse electric lighting and starting system, which includes a 157 ampere-hour battery.

Power Transmission System.

The clutch is a multiple dry disc type, consisting of five plates nine inches diameter that is claimed to be practically self-compensating for wear, and the transmission gearset is a selective sliding gear construction having three forward speed ratios and reverse.

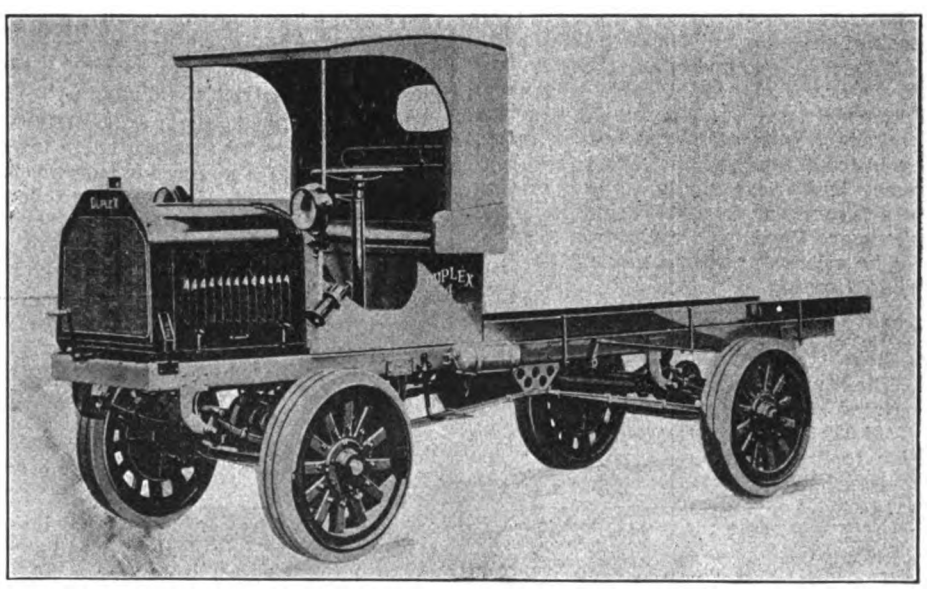
The shaft is coupled to the worm shaft of a straight or David Brown type worm driven axle, which has a gear reduction of 5.51 to 1. The front axle is a special steel drop forging. The frame is a pressed steel channel section with heavy cross members that is suspended on semi-elliptic springs, the forward ends of the rear set being pivoted to take the driving and braking stresses. The wheels are wood, artillery type, each having 12 1¾-inch square spokes, shod with pneumatic cord tires, 35 by five inches forward and 38 by seven inches rear. The wheelbase is 145 inches.

The chassis is equipped with driver's seat, front fenders, running boards, electric dash and tail lamp, windshield, starting motor, ammeter, motometer, speedometer, electric horn, jack, rim wrench, grease gun and full set of tools. A power tire pump is installed at an additional cost. The chassis is sold for $2575 f. o. b. Lansing. The allowance for the body is 1000 pounds.

Four-Wheel Driven Chassis Continued.

The company continues the manufacture and sale of the 3½-ton truck chassis, which is driven by four wheels, the normal load rating being 7000 pounds. This type has been built since 1908. The chassis length overall is 223½ inches, the width 70 inches, the height 100½ inches, from the dash to front of the seat 25 inches, from the dash to the rear of the seat 43¼ inches, from the rear of the seat to the rear of the frame 123 inches. The width of the frame is 39⅜ inches. The wheelbase is 130 inches and the tread is 60 inches.

The engine is a Buda, with the cylinder cast en bloc, with bore of 4¼ inches and stroke of 5½ inches, that is rated by the S. A. E. formula at 28.90 horsepower. The poppet type valves have ports that are 1⅞ inches diameter. The crankshaft is a three-journal type with journals that are respectively 2⅛, 2¼ and 2⅜ inches diameter from front to rear, and 3⅛, 2¾ and four inches length in the same order, having a total length of 9⅞ inches. The shaft is heat treated and ground. The connecting rods are heat treated steel drop forgings, having big end bearings that are 2⅛ inches diameter and 2½ inches length. The engine is cooled by a circulation of water that is forced through the cylinder jacket by a centrifugal pump and a round vertical tube radiator. The fuel is supplied from a 25-gallon tank through a Schebler carburetor with the air intake connected with a stove on the exhaust pipe, with dash air control, and the source of the ignition



The Standard Duplex 3½-Ton Truck Chassis, Driven by All Four Wheels, Claimed to Be the Original Machine Having This Type of Drive.

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current is an Eisemann high-tension magneto.

Double Reduction of Power.

The clutch is an enclosed multiple dry disc type and the drive is by shaft with a universal joint at either end from the clutch to the positive clutch type transmission gearset having three forward speed ratios and reverse, the reductions being two to one on second, four to one on first and 4.25 to one on reverse. The secondary gearset or chain case is a two to one reduction or direct drive, so that there is really two reductions when this is desired, that of the chain case and the transmission gearset. From the chain case the drive is through shafts, each having two universal joints to the front and rear axles, the reduction in the axles being eight to one.

The drive through the rear axle is a bevel gear differential gearset and a countershaft mounted on a dead axle having spur pinions that mesh with bevel gears enclosed in drums bolted to the rear wheels. The drive to the front axle is the same, but the countershaft has universal joints coincident with the steering pivots of the load carrying member, by which the machine is steered. The relation of the front and rear axles with the chassis is maintained by radius rods that extend to brackets placed at the center of each frame side member. These rods are constructed as are springs, with several leaves each to obtain strength and resiliency, and the ends are pivoted so that there shall be no stress upon them.

The Frame and Other Detail.

The frame is constructed of pressed steel channel section with heavy cross members and gussets, and this is suspended on semi-elliptic springs 41⅜ inches length and three inches wide, there being six leaves forward and eight leaves rear. The wheels are wood, artillery type, each having 12 spokes 2½ inches square, shod with 36 by six-inch solid tires. They are mounted on Bower roller bearings.

The steering gear is an irreversible worm and gear type connecting the front wheels by forged levers, with the tie rod back of the axle and the drag link at the left side. The hand wheel is 20 inches diameter. The control is by the usual foot pedals and hand levers. The service brake is a contracting band type operating on lower chain case shaft, and the emergency brake is a similar type operating on the upper chain case shaft. The brake shoes are lined with raybestos.

The price of this machine is $4000 f. o. b. at Lansing.

AUTO SIGNAL CO.

The Auto Signal Co. has been incorporated at Wilmington, Del., with capital of $1,000,000 to acquire patents in relation to traffic signals for motor vehicles and to develop the same.

NEW PLANTS AT SANDUSKY.

The Service Motor Truck Co., Wabash, Ind., is to build three new plants at Sandusky, O

New Federal Law to Prevent Thefts of Vehicles

Washington, D. C., Dec. 8.—In what manner shall the new Federal law known as the "National Motor Vehicle Theft Act" be enforced? This subject has received some consideration and as there is no provision in the statute for special jurisdiction, the supposition generally prevails that Department of Justice will only be concerned in the prosecution of offenders before the Federal courts. By this is meant that the state and municipal police departments will be expected to apprehend those who steal power vehicles, obtain the evidence and present it, and as the law applies to the nation there can be no legal quibbles with reference to offenses or offenders.

The law applies broadly to include the use of vehicles for interstate commerce and transportation of vehicles from one state to another, if stolen, comes within the application. The vehicles usually stolen are passenger cars, simply from the fact that these are more numerous and are more saleable than any other, but thefts of loaded trucks are by no means uncommon.

The full text of the statute, which became law without the signature of the President, is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled that this act may be cited as the National Motor Vehicle Theft act.

Section 2. That when used in this act:

(a) The term "motor vehicle" shall include an automobile, automobile truck, automobile wagon, motorcycle or any other self-propelled vehicle not designed for running on rails;

(b) The term "interstate or foreign commerce" as used in this act shall include transportation from one state, territory, or the District of Columbia, to another state, territory, or the District of Columbia, or to a foreign country, or from a foreign country to any state, territory, or the District of Columbia.

Section 3. That whoever shall transport, or cause to be transported in interstate or foreign commerce a motor vehicle, knowing the same to have been stolen, shall be punished by a fine of not more than $5000, or by imprisonment of not more than five years, or both.

Section 4. That whoever shall receive, conceal, store, barter, sell or dispose of any motor vehicle, moving as, or which is a part of, or which constitutes interstate or foreign commerce, knowing the same to have been stolen, shall be punished by a fine of not more than $5000, or by imprisonment of not more than five years, or both.

Section 5. That any person violating this act may be punished in any district in or through which such motor vehicle has been transported or removed by such offender.

WILL EXHIBIT MODEL SERVICE STATION.

One of the unique features on view at the coming New York automobile show will be the model service station exhibited by the Fairbanks Co., where all the latest devices for saving time and labor will be shown. This will be supplemented by a working repair shop in which "clinics" will be held during show week at the company's salesrooms at Broome and Lafayette streets, just one block below the Spring street station of the Lexington avenue subway.

Another interesting exhibit will be the F-B test stand, manufactured by the F-B Electric Manufacturing Co., Detroit, by which tests and repairs of all types of starting and lighting system troubles may be made under conditions identical with those in actual use on the car. The Fairbanks Co. has taken over the entire output of this concern.

The Fairbanks Universal burning-in machine, which will also be shown, very recently verified its name of "Universal" when during the coal shortage in Detroit over 100 of these units were sold for auxiliary purposes, numerous small factories and departments of large plants being driven by Ford motors set up on these machines.

During the month of January the Fairbanks Co. will hold running "clinics" at all Ford branches throughout Canada.

FIRESTONE'S $5.000,000 CANADA PLANT.

The Firestone Tire & Rubber Co. of Canada, Ltd., has been formed with a capitalization of $5,000,000 and will erect a factory at Hamilton, Ont., which is expected to be in operation in five months with a daily capacity of 3500 tires of all types and 2000 persons on the pay roll.

The Firestone company has bought 135 acres of land at Hamilton, on one-half of which it will build modern factory buildings, with a floor space of 320,000 square feet. On the other half the company will carry out a housing plan similar to that in Firestone Park, Akron, O.

In addition to the products made at the parent factory at Akron the new company will manufacture mechanical goods, including belting, and it is probable that a boot and shoe department will be established, as well as one for making steel rims.

The Firestone Tire & Rubber Co. of Akron now has 17,000 employees, is capitalized for $75,000,000 and the sales forecast for 1920 calls for an output valued at $120,000,000.

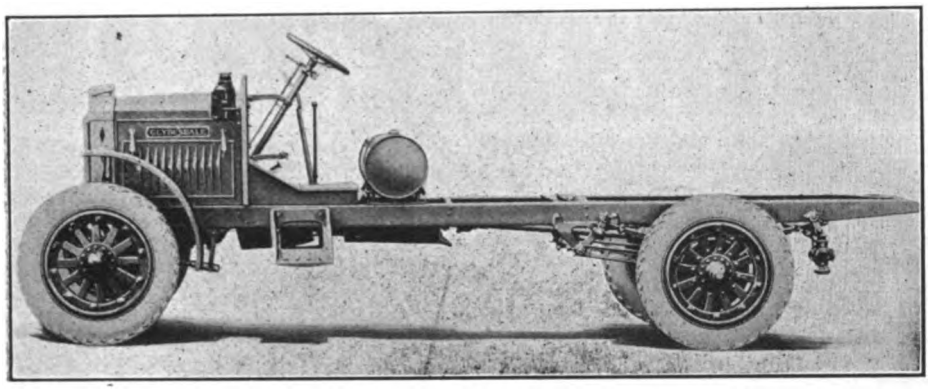
W. E. STEINBACK RESIGNS.

W. E. Steinback, treasurer and general manager of the Eisemann Magneto Corporation since its organization in 1910, has resigned and will engage in other business.

Mr. Steinback was largely instrumental in building up the business of the Eisemann corporation to its present successful proportions and is well known in automotive trade circles.

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TWO NEW CLYDESDALE TRUCKS



A Standard Type of Clydesdale Chassis Built for Heavy Duty and of Carefully Selected Units Produced by Specialists.

PRODUCTION of two new chassis, model 32, load capacity 2000 pounds, and model 42, load capacity 3000 pounds, has been begun by the Clydesdale Motor Truck Co., Clyde, O., which will complete the series of five trucks the company will build, the older chassis having load ratings of two, 3½ and five tons.

One design was determined for these machines, and preliminary to construction of the experimental machines the service records of all Clydesdale trucks were examined and the maintenance of each checked. Every cause of failure was studied to obtain construction that would obviate it so far as possible, so that claim is made that the design is a composite experimental model based on service in all parts of the world covering a period of eight years. Statement is made that the basis principles of design and the fundamentals of construction that were proven in the chassis of the London Omnibus Co. have been practically reproduced in the new Clydesdale chassis.

Of course many of the distinctive qualities of the Clydesdale design are to be found in the light chassis. The wheelbases are 144 inches and the treads are 56 inches for model 32, and 56 inches forward and 58 inches rear for the model 42. The loading space for both is 117½ inches. The turning radius is 26 feet. The chassis are built for a standard maximum speed with the automatic controller of from 16 to 18 miles an hour.

The Engine a Continental Truck Type.

The engine is a Continental, a four-cylinder, four-cycle, water cooled, L-head, vertical type with cylinder bore of 3¾ inches and stroke of five inches, that is rated by the S. A. E. formula at 22.50 horsepower, which is claimed will develop 27 horsepower at 1200 revolutions a minute. The cylinders are cast en bloc with separable head with the water jacket integral. The crankcase is cast in two sections. The pistons are the same material as the cylinders and are fitted for three diagonally split rings 3/16 inch wide.

The crankshaft is a special steel drop forging, with the flywheel and thrust flanges integral that is heat treated and ground 2 3/16 inches diameter at the front and center journals and 2¼ inches at the rear, and 2⅞, 2½ and three inches length respectively. The total bearing length is 8 1/16 inches. The camshaft is a single-piece drop forging with the cams integral. The connecting rods are I section drop forgings heat treated, the crankpin bearings being 1⅞ inches diameter and 2½ inches long. The main and crankpin bearings are nickel babbitt in bronze cages that are fitted with shims. The engine is lubricated by a combination force feed and splash system and it is cooled by a thermo-syphon circulation of water through the cylinder jacket and a large radiator with cast aluminum top and bottom tanks and a cooling section constructed of vertical copper tube without fins. The radiator is mounted on springs and it is protected by a heavy bar guard. Radiation is promoted by a large fan mounted on an annular ball bearing on a bracket on the front of the engine block driven by a flat belt from a pulley on an extension of the magneto shaft.

The fuel is fed by gravity from a 30-gallon tank through a Zenith carburetor and the current for the ignition is supplied by a high-tension magneto. The engine is governed by the well known Krebs controller, exclusive equipment with Clydesdale trucks, which regulates the relation of carburetor and magneto by which the speed of the vehicle may be maintained at any desired setting, and the driver need do nothing but steer the vehicle after it has been started.

The System of Power Transmission.

The power transmission system includes a multiple plate dry clutch that is claimed to be practically self-adjusting and requires no attention save occasional lubrication of the throw-out collar, and a ing three forward speed ratios and resliding gear selective type gearset havverse, these being assembled in with engine as a unit power plant that is supported at three points. The transmission gearset shafts are large and mounted on Timken roller bearings, and the gears have ¾-inch faces. The gear ratios are direct, 1.68:1 for second, 3.33:1 for low and 4.35:1 for reverse.

The power is transmitted through a tubular shaft with universal joints at either end to the worm shaft of the semi-floating worm drive axle. The front axle is a heat treated drop forged steel I section. The frame is pressed steel channel section 5½ inches wide with 2¾ inch webs of 3/16 inch stock, reinforced with cross members and gusset plates. The maximum width of the frame side member is at the center and these taper to the ends, the object being to have strength where the greatest stresses must be endured.

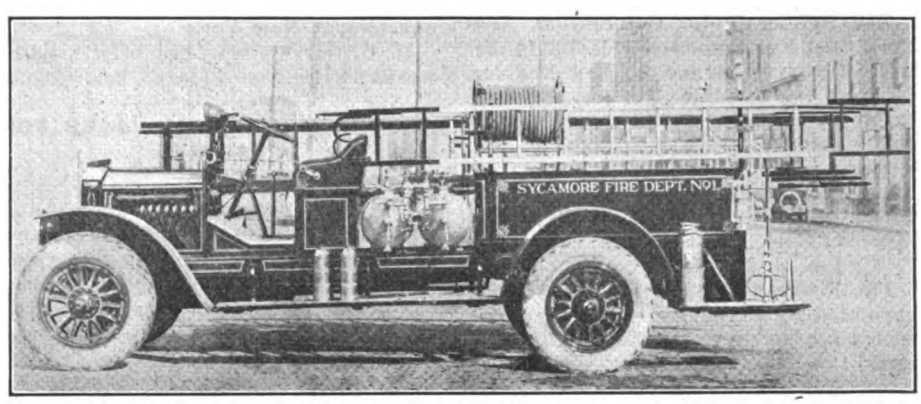
The Frame and Other Chassis Units.

The frame is suspended on semi-elliptic springs of special alloy steel, the forward set being 36 inches long and 2¼ inches wide, and the rear set 50 inches long and three inches wide. The spring eyes are bushed and fitted with special oil cups.

The wheels are wood, artillery type, shod with pressed on solid bands 36 by 3½ inches forward and 36 by six inches rear for the model 42. Pneumatic tires will be furnished at additional cost.

The control is by the usual foot pedals and hand levers, with ignition and throttle levers on the hand wheel. The gear shifting and emergency brake levers are at the center of the footboard. The steering column is a worm and nut type and is at the left side, it having an 18-inch wheel. The steering linkage is unusually heavy. The two sets of brakes are internal expanding in drums 17 and 12¼ inches diameter respectively and 2½ inches wide on the rear wheels.

The weight of the model 42 chassis is 3800 pounds and the allowance for the body is 1500 pounds. The model 32 chassis weighs 3400 pounds and the body allowance is 1000 pounds.



Clydesdale Light Truck Chassis Equipped as a Fire Apparatus, Especially Adapted for Fast Work and with Pneumatic Tires.

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NEW COTTA SALES AND SHOP ORGANIZATION.

The Cotta Transmission Co., Rockford, Ill., has completed its manufacturing plan for the coming year and has increased its organization for the purpose of producing and distributing its product. The company claims to be the largest exclusive manufacturer of truck and tractor transmission gearsets in the United States.

D. W. Bay, formerly sales engineer for the motor bearings division of the Hyatt Roller Bearing Co., has been made sales manager, and he will be assisted by F. W. Ramey, who has returned from duty overseas in the United States army. Mr. Bay will join the company Jan. 1.

Production will be directed by W. J. McLaughlin, formerly with the Continental Motors Corporation. The company has adopted the progressive system of assembly. In an admirably equipped factory the organization, changing from 90 per cent. war work, brought its commercial sales and production above the high figures for the war period without government contracts in the volume.

NEW SANFORD MANAGERS AND AGENCIES.

W. R. Mason has been appointed district sales manager for New England, and Hamilton Clive district sales manager for the South, the former with headquarters at Boston and the latter with headquarters at Atlanta, Ga., by the Sanford Motor Truck Co., Syracuse, N. Y.

Agency contract has also been made with Lampee-Hitchcock, Inc., of Boston for the sale of Sanford trucks in Massachusetts and New Hampshire.

PHELPS NOW ATTERBURY PURCHASING AGENT.

Harry Phelps has been made purchasing agent for the Atterbury Motor Car Co., Buffalo, N. Y. He was with the Curtiss Aeroplane Co. and the American Radiator Co. before joining the Atterbury company three years ago. He was absent 14 months while serving in the army, a year of his time being in active service in France with the 302nd Engineers, 77th Division.

LAKIN JOINS RAINIER MOTOR TRUCK.

The Rainier Motor Corporation, New York City, has appointed J. B. Lakin district sales manager for the New England territory. Mr. Lakin was for a considerable period active in the power vehicle trade, but recently was engaged in war work.

DINE IS FIRESTONE BRANCH MANAGER.

The Firestone Tire & Rubber Co. has appointed J. M. Dine, who was a special representative in the Northwest for the truck tire sales department, manager of the branch at Dallas, Tex. This district includes practically the northern half of Texas.

WILSON WITH HERSCHELL-SPILLMAN.

H. D. Wilson has been elected a vice president of the Herschell-Spillman Motor Co. and his duties will include a portion of the general administration as well as the directing of the distribution of the company's product and the initiating and supervising of publicity.

Mr. Wilson's former experience, in connection with which he has contributed extensively to the general development of the automotive industry, dates from 1902, when he joined the Olds Motor Works. In 1905 he joined the Packard Motor Car Co. at first for three years as purchasing agent and later as foreign manager with headquarters in Paris, France. In 1912 he returned to this country as sales manager of the Eisemann Magneto Co. of Stuttgart, Germany. In addition to these positions he has held the following: With the Ferro Machine & Foundry Co. of Cleveland as assistant to the president in charge of sales; sales manager, Dyneto Electric Corporation, Syracuse, N. Y.; sales manager, Bijur Motor Appliance Co., Hoboken, N. J.

SINRAM PRESIDENT OF VAN DORN & DUTTON CO.

F. W. Sinram, who for several years was general manager of the Van Dorn & Dutton Co., Cleveland, O., was at the last meeting of the board of directors elected president of the concern. Franklin Schneider, who is president of the Van Dorn Electric Tool Co., was elected vice president at the same meeting. Mr. Sinram is treasurer of the Van Dorn Electric Tool Co.

Mr. Sinram is regarded as being the one who has developed the Van Dorn & Dutton Co. until it is one of the largest gear cutting specialists of the country, and his capacity for organization was recognized by the American Gear Manufacturers' Association, which elected him its first president and has re-elected him annually ever since.

FAIRBANKS' SALES MANAGER.

A. G. McMillan, formerly eastern sales manager of the automobile service station equipment division of the Fairbanks Co., New York, has been appointed general sales manager of that division. This adds the Far West to his already extensive territory. He will make his headquarters at New York.

H. B. Garvey, who has been handling western sales from Chicago, has resigned.

FISHER IS STATE MANAGER FOR RAINIER.

The Rainier Motor Corporation has appointed W. A. Fisher, who recently was retired from the Motor Transport Corps, U. S. A., with rank of captain, to have charge of its sales in New York state. He will have headquarters at Rochester.

The Diamond T Pacific Truck Co., has been organized at Los Angeles, Cal., with $100,000 capital.

CHANGES IN THE FIRESTONE ORGANIZATION.

L. A. Brown, formerly truck tire sales manager for the Firestone Tire & Rubber Co., at the Minneapolis, Minn., branch, has been made special truck tire sales representative for the Northwest, his place at the branch being filled by James Roddy.

C. W. Brown of the branch operating department has been made office manager at the St. Louis, Mo., branch, succeeding M. O. Halverstadt, who has been made office manager at Des Moines, Ia., to succeed G. H. Smoots, resigned. A. W. Hugh, office manager at Columbus, O., has been transferred to Fargo, S. D., as office manager; George Jacoby has been transferred from Toledo, O., to Great Falls, Mont., as office manager; E. A. Snyder has been sent from Kansas City to Minot, N. D., as office manager; A. L. Miller has been made special pneumatic tire sales representatives for the San Francisco branch.

JACKSON MOTORS CORPORATION NAMES EXECUTIVES.

The Jackson Motors Corporation, Jackson, Mich., which has planned to build several hundred 3½-ton four-wheel drive trucks and 3000 cars by July 1, will shortly begin production. E. M. Benedict, who was formerly production manager for the Hayes Wheel Co., has been appointed works manager, and Guy C. Core, who was with the Briscoe Motor Corporation for two years as advertising manager, will direct the publicity campaign. Mr. Core was associated with the advertising departments of the Springfield Body Co. and the Redden Motor Truck Manufacturing Co.

NAPOLEON TRUCK DISTRICT SALES FORCE.

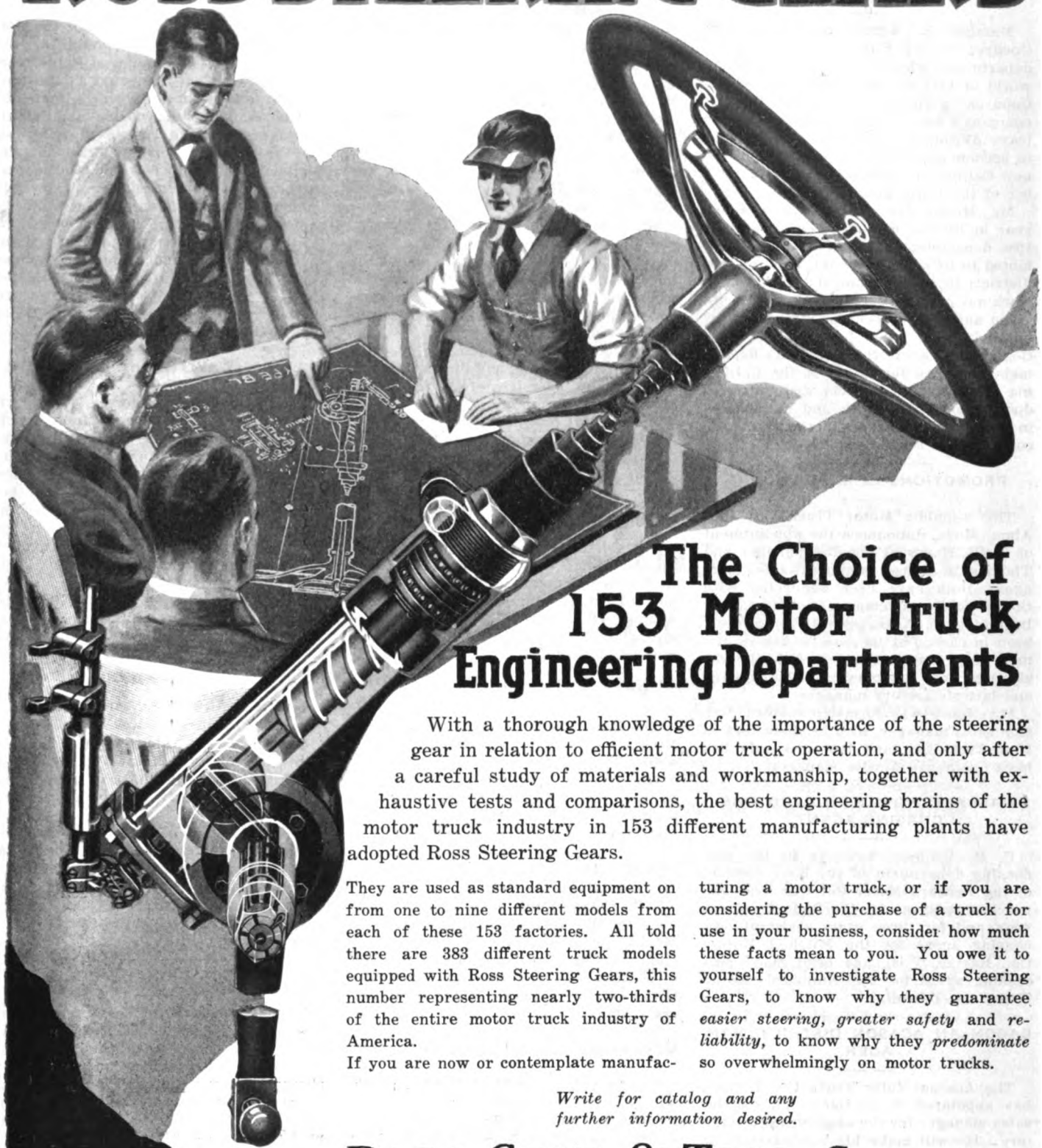
The district sales force of the Napolean Motors Co., Traverse City, Mich., has been organized with the following personnel by Sales Manager C. D. Peet: Southwestern, with headquarters at Tulsa, Okla., B. P. Haynie, formerly with the Traffic Truck Co.; Northwestern, with headquarters at Omaha, Neb., M. R. Guyer, formerly with Hanson & Tyler Automobile Co.; Southern, with headquarters at Dallas, Tex., D. M. Finley, formerly with the Cataract Refining Co., and factory, D. M. Ferry, formerly with the Reo Motor Car and Republic Motor Truck companies.

DOMVILLE NOW DIVISIONAL SALES MANAGER.

The American Motor Truck Co., Newark, O., has appointed C. H. Domville divisional sales manager for the Central West division, with headquarters at Chicago. He has been active in the trade for 16 years, having been recently with the Diamond T Motor Truck Co. and previously with the Maxwell Motor Co. and several passenger car manufacturers.

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ROSS STEERING GEARS



The Choice of 153 Motor Truck Engineering Departments

With a thorough knowledge of the importance of the steering gear in relation to efficient motor truck operation, and only after a careful study of materials and workmanship, together with exhaustive tests and comparisons, the best engineering brains of the motor truck industry in 153 different manufacturing plants have adopted Ross Steering Gears.

They are used as standard equipment on from one to nine different models from each of these 153 factories. All told there are 383 different truck models equipped with Ross Steering Gears, this number representing nearly two-thirds of the entire motor truck industry of America.

If you are now or contemplate manufacturing a motor truck, or if you are considering the purchase of a truck for use in your business, consider how much these facts mean to you. You owe it to yourself to investigate Ross Steering Gears, to know why they guarantee *easier steering, greater safety* and *reliability*, to know why they *predominate* so overwhelmingly on motor trucks.

Write for catalog and any further information desired.

ROSS GEAR & TOOL COMPANY
790 Heath Street, Lafayette, Indiana, U.S.A.

The Steering Gears that Predominate on Motor Trucks

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INDUSTRY AND TRADE ACTIVITIES

MORRIS GOES TO CALIFORNIA GOODYEAR COMPANY.

Marshall E. Morris, manager of the Goodyear Tire & Rubber Co.'s salesman's department, who surprised the financial world in 1917 by engineering the sale of Goodyear preferred stock by using that company's own selling organization, is to leave Akron for Los Angeles in January to become assistant sales manager of the new California Goodyear Co., and a member of the board of directors.

Mr. Morris first affiliated with Goodyear in 1912 as manager of the carriage tire department. In 1913 he was promoted to be manager of the Pacific coast district; in 1915 he returned to Akron to work out a plan by which salesmen were given automotive transportation to carry on their work; then followed his selection as manager of the salesman's department. On the formation of the California company he was charged with the distribution of its stock and his success in that capacity assures him a warm welcome on the Pacific coast.

PROMOTIONS IN REPUBLIC CO.

The Republic Motor Truck Co., Inc., Alma, Mich., announces the appointment of O. W. Hayes as general manager and Thomas M. House as general sales manager. Both have been connected with the Republic company almost from its beginning, Mr. Hayes having formerly been in charge of the purchasing department and also connected with the designing and engineering departments, and latterly factory manager.

Mr. House was formerly eastern division sales manager, with headquarters in New York City, and more recently has been Pacific coast sales manager.

WALLACE NOW STANDARD PURCHASING AGENT.

C. M. Wallace, formerly in the purchasing department of the body division of the Packard Motor Car Co., who was purchasing agent for the Buda Co. for a year, and for three years assistant purchasing agent for the Mitchell Motors Co., Racine, Wis., has been made purchasing agent for the Standard Motor Truck Co., Detroit.

BACON AN ACASON DISTRICT MANAGER.

The Acason Motor Truck Co,, Detroit, has appointed F. S. Bacon its district sales manager for the southwestern territory. He will make his headquarters at Fort Worth, Tex.

GUNTHER IS SPECIAL REPRESENTATIVE.

H. J. Gunther, formerly city salesman for the Firestone Tire & Rubber Co. at its Chicago branch, has been made special representative for truck tire sales for that branch.

HEASLET HEADS SIGNAL TRUCK CO.

At a recent special meeting of the board of directors of the Signal Motor Truck Co., Detroit, James G. Heaslet was elected president to fill the unexpired term of W. K. Hoagland, resigned. Mr. Heaslet has acquired a very substantial interest in the Signal company and as he is recognized as an authority in the automotive industry, having been one of its pioneers, his new connection with the Signal company is considered with unusual interest.

Mr. Heaslet was with the Autocar Co. of Philadelphia as early as 1897 as chief engineer. He later held the same position with the Garford Co., Cleveland, O., where he designed both passenger cars and motor trucks. For several years past he has been vice president of the Studebaker Corporation, in charge of production and engineering, and during the war had complete oversight of the making of Liberty aviation motors

Mr. Heaslet has in mind plans for enlargement and extension of production facilities to meet the increasing demand for the Signal trucks.

ANDERSON SUCCEEDS ADAMS.

The Connecticut Telephone & Electric Co., Meriden, Conn., has appointed E. C. Anderson manager of sales promotion and advertising, he succeeding Otis H. Adams, who resigned to associate himself with the Greenleaf Co., advertising counsel of Boston.

ENLARGING UNION FACTORY.

The Union Motor Truck Co., Bay City, Mich., is enlarging its manufacturing facilities by the erection of a new unit, 200 by 750 feet with two wings, each 150 by 400 feet. This additional space will render possible the turning out of 15 complete trucks a day.

CASEY IS EASTERN SUPERVISOR.

V. V. Casey is now eastern sales supervisor for the Northwestern Chemical Co., Marietta, O., in charge of the territory from the Canadian boundary to the Gulf of Mexico. He was previously representative for the company in the southeastern states.

NEW HOME FOR GOODRICH BRANCH.

The branch of the B. F. Goodrich Rubber Co., at Oklahoma City, Okla., will be located in a new building before the end of the year. The branch will be in a two-story structure 25 by 140 feet, which will have about 7000 square feet of floor space.

WARD LA FRANCE CORPORATION.

The Ward La France Corporation has been incorporated at Wilmington, Del., for the manufacture and sale of motor trucks, etc. The capital is $10,000,000.

TORBENSEN AXLE CO.'S NEW DEPARTMENT CHIEFS.

Robert Enos, vice president of the Torbensen Axle Co., Cleveland, O., announces the appointment of three new executives of that company, as follows:

J. D. Smith, formerly works manager for the Timken Co., becomes manufacturing manager of the Torbensen plant. G. W. Veale, production supervisor at the Timken plant, is to be production superintendent for Torbensen. G. W. Carlson, engineer at the Timken plant, will fill the same position with Torbensen.

All these men have won a high reputation as engineers and manufacturers and their engagement by Torbensen is in line with the policy of that company to secure the most experienced executives to maintain the high standard of that concern.

ALBRIGHT WITH THE STANDARD.

C. Ernest Albright, formerly western field manager of the Acason Motor Truck Co., has become Pacific coast sales manager of the Standard Motor Truck Co., Detroit. After several years experience as a mining engineer Mr. Albright became identified with the automotive industry as wholesale superintendent of the Pacific Coast Motor Co., Los Angeles, Cal., and the Oregon Motor Car Co., Portland, Ore., successively.

Associated with Mr. Albright as field representatives of the Standard Motor Truck Co., are Edward W. Kruspe and R. B. Bowman, western and eastern sales managers, respectively.

WINTHER'S NEW OFFICIALS.

George Drake Smith, who recently joined the Winther Motor Truck Co., Kenosha, Wis., for the purpose of reorganizing the sales, advertising and service departments, has been elected a vice president and member of the board of directors of the company. An export department has been organized, in charge of Charles H. Meeker. C. T. Abbott has been elected secretary and H. D. Snyder has been appointed assistant general sales manager.

INTERNATIONAL TRUCK.

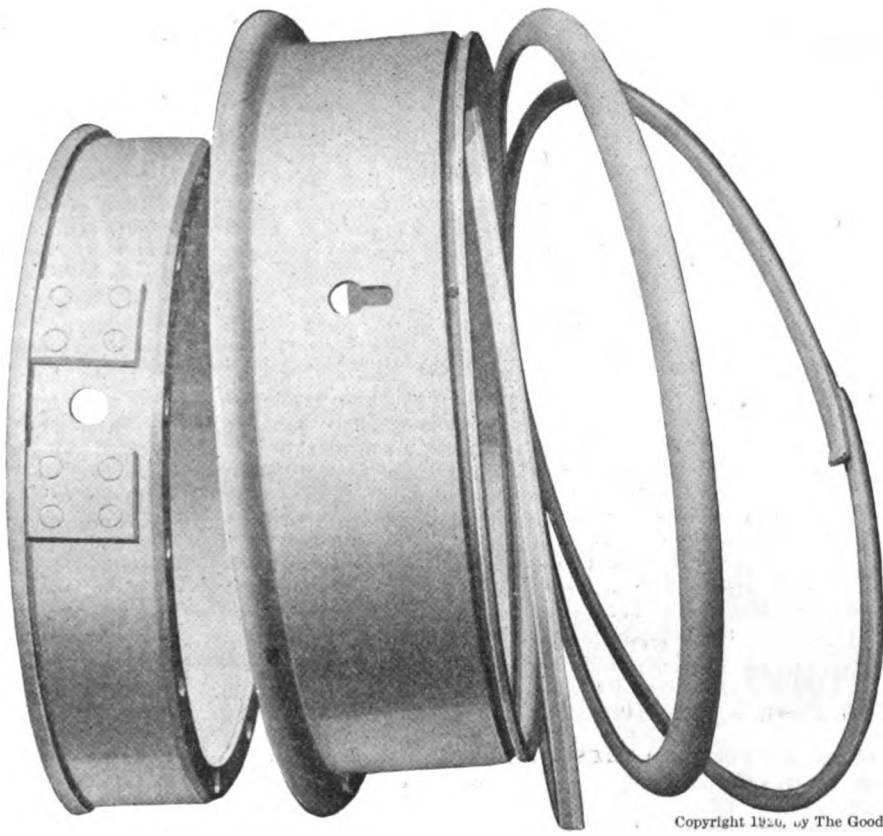
The stockholders of the International Motor Truck Corporation, New York, have voted to increase the authorized common stock capitalization from 53,638 shares to 80,480 shares. The number of shares of second preferred has been increased from 27,230 to 53,478 and first preferred from 43,816 to 109,219 shares.

The plan to increase the directorate from 13 to 17 was also ratified.

EATON AXLE CO. AT SHOW.

The Eaton Axle Co. of Cleveland, O., will be represented at the New York automobile show by Torbensen, Eaton and Hill, with headquarters at Hotel Vanderbilt.

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Copyright 1920, by The Goodyear Tire & Rubber Co., Akron, O.

Why Goodyear Rims Operate With Unusual Smoothness

Goodyear pioneered the straight side tire by pioneering a rim which made the use of straight side tires entirely successful.

So fundamentally correct was the original Goodyear Ideal Rim that it has served as the standard of practically all rim manufacture since its introduction in 1907.

The present Goodyear Demountable Rim offers the advantages of this primary type plus a locking feature distinct among rims.

Built on an oval contour, the locking ring fits snugly against the side ring, insuring absolute stability and safety, yet permitting of utmost ease in operation because of its smooth, rounding surface.

This, undoubtedly, is one important reason why Goodyear Rims are so predominantly popular with truck manufacturers.

Goodyear Rims are made in all sizes in both demountable and detachable types, thus offering an unmatched line—a rim for every need.

Further information about these easily operated rims can be secured by writing to The Goodyear Tire & Rubber Company, at Akron, Ohio.

Haul on Pneumatics

GOODYEAR

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SPECIAL INTERNATIONAL WHEELBASES.

The International Motor Co., New York, has sent out notices to branches and dealers that it is now prepared to furnish special lengths of wheelbases on the AB chassis at an additional net price of $100 for the 15, 16½ and 18-foot wheelbases, this price including heavier springs on the rear. On the AC chassis special wheelbase lengths can be furnished at an additional net price of $50 for the 16-foot wheelbase, and on the 17, 18, 19 and 20-foot wheelbase, on which a special center bearing is used on the drive shaft, the additional net price is $125.

Overman cushion tires, guaranteed for 20,000 miles, will be furnished on AB chassis at additional net prices, as follows: Front, 1½-ton Y-36, 36 by 4, $185; rear, R-36 dual, 36 by 3½ D, $345; complete, $530. Front, two-ton Y-36, 36 by 4, $185; rear, Y-36 dual, 36 by 4 D, $380; complete, $565.

NORMA COMPANY ESTABLISHED IN NEW FACTORY.

The Norma Co. of America, manufacturer of Norma precision bearings, on Dec. 10 removed its factory from the Bronx, New York City, to Anable avenue, Long Island City, into a four-story reinforced concrete structure built for manufacturing. The production of bearings will be greatly increased, for much more space is available and with new special machines now being installed the capacity will be very much larger. The executive offices, which were at 1790 Broadway, have been consolidated with the factory.

NEW PRICES FOR PARKER TRUCK CHASSIS.

Announcement is made by the Parker Motor Truck Co., Milwaukee, Wis., that as of Dec. 1 the prices for the truck chassis it builds were advanced from $175 to $375 a unit, according to capacity. The new prices are as follows:

Model	Old Price	New Price
F-9-W (two-ton)	$3325	$3500
F-9 (3½-ton)	4150	4400
M-9 (five-ton)	5225	5600

REPUBLIC LOS ANGELES PLANT SOLD.

The plant of the Republic Truck Co. at Los Angeles, Cal., has been purchased by the Leach Biltwell Motor Co. of Los Angeles. The transfer includes 12 acres of ground, with three large buildings, besides office buildings, dry kiln, pump house, loading dock, spur tracks, etc. The plant is three miles from Los Angeles, with direct connection with the Santa Fe railroad.

The Chambers Motor Co., Inc., Buffalo, N. Y., has made contract to be New York state distributor for Rainier trucks.

NEW AXLE COMPANY FORMED.

V. V. Torbensen, inventor of the Torbensen axle and one of the founders of the Torbensen Axle Co., Cleveland, O., which is now a subsidiary of the Republic Motor Truck Co., and J. C. Eaton, formerly president of the Torbensen Co., are associated with the Eaton Axle Co., which has just been organized at Cleveland by well known financial interests with $5,000,000 capital. Mr. Torbensen is chief engineer and Mr. Eaton president and general manager of the new concern.

The Eaton Axle Co. will have its first factory unit completed soon and will be marketing its product by June, 1920. Two distinct types of axle will be manufactured, based on new inventions of Mr. Torbensen, a conventional passenger car axle of beveled gear drive and a truck model of the internal gear type with all the gears operating in oil.

During the first year of operation it is planned to produce 200 sets of passenger car and 100 sets of truck axles a day, and contracts for these have already been made.

CLYDESDALE TRUCK CO. INCREASES CAPITAL.

The capital of the Clydesdale Motor Truck Co., Clyde, O., has been increased from $500,000 to $1,500,000, this increase being necessary to meet the demands of a constantly growing business. This authorized the issuance of $1,000,000 common and $500,000 preferred stock in shares having par value of $10. The entire issue has been underwritten by a Cincinnati banking house.

The name of the company, which was the Clyde Cars Co., was changed to better identify the production of the concern, which has always been trucks, the original name being regarded as not sufficiently specifying the production and more or less confusing to prospective buyers.

REPUBLIC TRUCK QUARTERLY EARNINGS.

The consolidated income account of the Republic Motor Truck Co., Alma, Mich., and the Torbensen Axle Co., Cleveland. O., for the three months ending Sept. 30, show net sales of $6,264,773, against which is charged cost and various items of expense amounting to $5,619,822, which showed a net profit of $644,951. To this is added other items of income totaling $122,279, the total income being $767,230. With interest charges of $246,327 deducted the surplus is $520,903 before allowance for Federal taxes.

TRUCK COMPANIES WILL BUILD PASSENGER CARS.

The Winther Motor Truck Co., Kenosha, Wis., and the Moreland Motor Truck Co., Los Angeles, Cal., will shortly produce passenger cars, the machine to be built by the former to be a six-cylinder type.

BYRON ENGINEERING WORKS WILL BUILD TRAILERS.

The Byron Engineering Works has been incorporated at Louisville, Ky., with Graeme McGowan as president, O. F. Byron as vice president and Walter McGowan secretary and treasurer, for the purpose of manufacturing trailers. The concern is now negotiating for a property on which a factory will be erected. Production will be begun as quickly as production facilities are obtained.

The trailers will be built to designs perfected by O. F. Byron, who designed two types that are now sold commercially in considerable numbers. He was a captain during the European war and designed the trailers built for the Motor Transport and the Engineering Corps. The plan of the company is to operate on a large scale.

JOHNSON COMMERCIAL BODY COMPANY ORGANIZED.

The Johnson Commercial Body Co. has been incorporated at Fort Smith, Ark., with a capital of $150,000 for the purpose of building motor truck bodies. The officers are as follows: President, Fred B. Johnson. founder of the Johnson body business; vice president, Paul W. Sheridan; treasurer, E. H. Nakdimen, president of the National City bank of Fort Smith; secretary, B. E. Weist; other directors, Charles H. Harding, president of the Harding Glass Co.; Thomas H. Weaver, general manager of the Fort Smith Brick Co., Ben Cravens.

The Johnson Commercial Body Co. is to build an addition 140x300 feet to the present plant and will employ 150 men.

SELLS $1,000,000 OF TRUCKS A MINUTE.

As a climax to a very prosperous year the Traffic Motor Truck Corporation, St. Louis, Mo., took orders for $22,000,000 worth of Traffic trucks in 22 minutes from its various dealers who were assembled in convention at the company's plant. Each dealer specified the number of trucks he desired for 1920, and after the results had been tabulated it was announced that the allotment asked for totaled over $22,000,000 worth, and the time consumed in going over the list of dealers was less than 22 minutes.

SERVICE TRUCK PRICES ADVANCED.

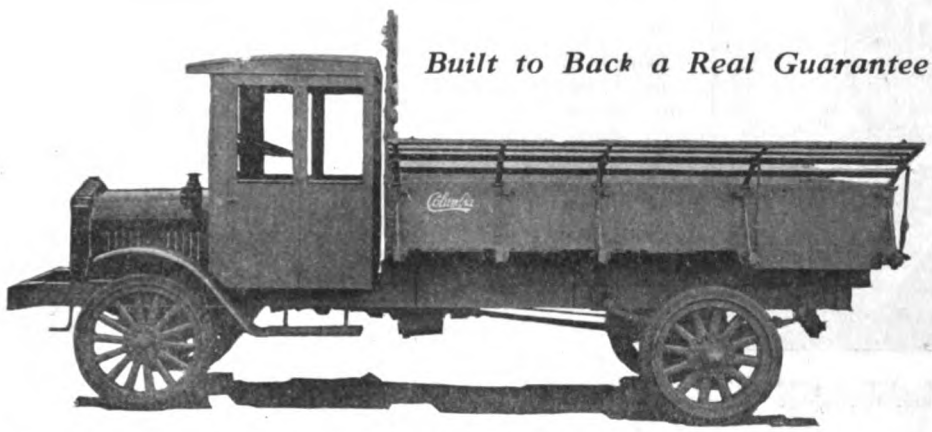
The Service Motor Truck Co., Wabash, Ind., builder of Service trucks, has increased the prices of its truck chassis, stating that this is necessary because of increase of manufacturing costs. The new prices, which became effective Dec. 5, are as follows:

Model	Capacity Tons	Price
220	1	$2245
31	1½	2785
36	1½ special	3215
51	2½	3245
71	3½	4085
76	3½ special	4285
101	5	5145

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COLUMBIA TRUCKS & TRAILERS

Built to Back a Real Guarantee



THE NEW 2½ TON COLUMBIA

Is typical of all Columbia products as it represents in actual truck worth the greatest value that money and science can produce.

All Columbia trucks are standard in design and construction and embody only features that have been proven to be desirable. The units used are known to all truck buyers and the best that the leading producers in the industry can supply.

Columbia trucks deliver the goods and at minimum cost. They keep working and earning and their service life is years. That is why the great number of Columbia repeat orders are proof that Columbia trucks must pay the best.

All Columbia Products are Fully Guaranteed for One Year

We seek desirable representatives in proportion to the growth of our output. We can offer at this time an exceptional agency proposition. Columbia deliveries are made to schedule, and our dealers can afford a service in keeping with Columbia standards.

Brief Specifications of the Columbia 2½-ton Truck.

Hinkley Liberty Engine—Hot spot ram's horn manifold; built-in governor.
Stromberg carburetor fed by vacuum tank.
Russel-Columbia internal gear rear axle, with all brake levers inside of frame.
Detlaff Class B multiple disc clutch, dry plate type.
Bosch magneto.
Spicer joints and drive shafts.
Covert transmission, amidships.
Perfection springs.
Six-inch rolled steel frame.
Seven-inch Firestone tires.
Stewart-Warner speedometer.
Motometer.

Built in 114, 134, 144 and 164-Inch Wheelbase.

Columbia Truck Capacities
1½ tons, 2½ tons.

Tractors with Semi-Trailers
3 and 6 tons.

Columbia trucks are the highest quality, medium priced truck made.

COLUMBIA TRUCK & TRAILER COMPANY

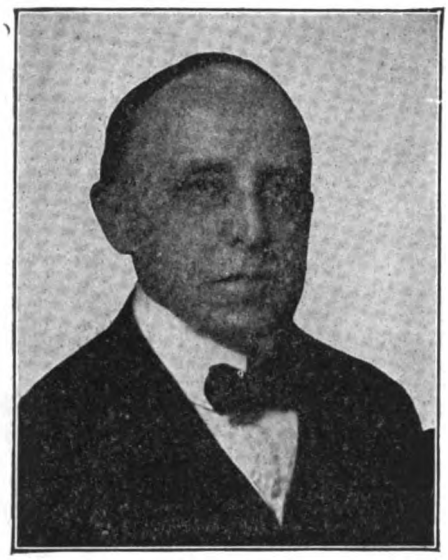
Pontiac **103 Columbia Road** **Michigan**

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SALES ORGANIZATION CHANGES

C. E. DAVIS IS EISEMANN'S NEW MANAGER.

The Eisemann Magneto Corporation has appointed Charles Ethan Davis as general manager, succeeding W. E. Steinback, resigned.



Charles Ethan Davis, New General Manager of the Eisemann Magneto Co.

Mr. Davis is a graduate of Worcester Polytechnic Institute, and after spending years as a construction engineer in Hartford, Conn., and Chicago, he became sales manager of the Pratt & Whitney Co., Hartford, and later factory manager of the Illinois Sewing Machine Co. Other activities of Mr. Davis have included that of works manager of the American Locomotive Co.'s plant, making Alco cars and trucks, general manager of the Warner Gear Co., Muncie, Ind., and general manager of the American Locomotive Co. When the war came on he was appointed manager of the Walco Co., Providence, R. I.; in December, 1916, he became general manager of the Simplex Automobile Co., New Brunswick, N. J. Then after another brief period of consulting work he became engineer at large under the United States chief of ordnance. He resigned this position in 1918, resumed consulting work and recently acted as a member of the technical section of the Army War Claims Board at Washington, D. C., and was released from this service to accept the general managership of the Eisemann plant.

WILLIAMS FOUNDRY & MACHINE CO.'S NEW OFFICERS.

At the annual meeting of the Williams Foundry & Machine Co., manufacturer of Akron-Williams vulcanizers and other tire repairing machinery, Akron, O., the following officers were elected: President, F. E. Holcomb: vice president, S. F. Zillox; treasurer, G. Carl Dietz: secretary and assistant treasurer, William J. Slater; additional directors, Charles Revmann, Charles Herberich, A. W. Burnett.

NASH NOW BEAVER SALES MANAGER.

W. H. Nash, for a considerable period of time in the sales department of the Timken Detroit Axle Co., Detroit, has been made sales manager for the Beaver Manufacturing Co., Milwaukee, Wis., builder of engines, which is specializing the production of a four cylinder heavy duty type for tractors and trucks and a six-cylinder type for passenger cars. Mr. Nash is widely known in the automotive industry.

ROCKHILL IS GOODYEAR SALES MANAGER.

The Goodyear Tire & Rubber Co., Akron, O., has created the position of sales manager and appointed to fill the office a man well known in the tire and rubber industry, L. C. Rockhill, who has been connected with the Goodyear company for the past 12 years.

This appointment, coming as it does, at a time when the Goodyear company is able to announce that the year just closed is the most successful in its already remarkable history, with a total gross sales of nearly $169,000,000, will attract wide attention to the man who will now direct its sales policies.

Previous to his connection with Goodyear, Mr. Rockhill was in the advertising department of a Cleveland newspaper. His first service with the tire company was in charge of the repair department, which was a sub-division of the automobile tire department, handling repairs and adjustments. He was successively made manager of the aeronautical department, manager of the automobile tire department and assistant sales manager in charge of tire sales. His latest appointment is in line with the consistent policy of the company of recognizing ability and rewarding loyal service.



L. C. Rockhill, Appointed General Manager of the Goodyear Tire & Rubber Co.

TOWNSEND GOES TO HOOVEN RADIATOR CO.

R. H. Townsend, for the past six years general construction superintendent of the L. L. Nunn interests, has become chief engineer of the Hooven Radiator Company, Chicago, for which position he is well fitted by his thorough technical training and wide industrial experience.



R. H. Townsend, Made Chief Engineer of the Hooven Radiator Co.

The Hooven Radiator Co. is preparing to move into larger quarters, which afford more adequate facilities to meet the rapidly increasing demand for its product.

CHANGES IN HAYES FACTORY AND SALES PERSONNEL.

Charles Drum, formerly with the Hayes Manufacturing Co., Detroit, but now in charge of the Buick Motor Body Co., will return to the Hayes Co. on Jan. 15 as factory manager.

Harry Deering, who has been with the Hayes company for several years, is to have charge of production in the sheet metal plant.

A. T. Wieland who, previous to his connection with the Hayes Ionia Co., was in the body department of the Pierce-Arrow Co., is to be superintendent of the Hayes company's body plant.

L. B. Griffin, formerly in the sales department, is now assistant to the president, and Godfrey Strelinger, formerly in the production department, is to take Mr. Griffith's place in the sales department.

JOHNSON NOW MACCAR WESTERN SALES MANAGER.

The Maccar Truck Co., Scranton, Pa., has appointed W. Halsey Johnson, who was recently relieved from army service, its western sales manager. Mr. Johnson was actively connected with the trade, both retail and wholesale, before he entered the army.

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Acason TRUCKS The OWNER FIRST

A PRODUCT IS USUALLY WITHOUT HONOR IN ITS "HOME TOWN"

400 ACASON MOTOR TRUCKS OPERATE IN DETROIT

The Home of the Motor Wise

Serviced and Sold in Principal Cities

1 to 10 Ton Capacities

Some Territory is Still Open

Eben Luther, New England Manager, 348 Worthington Ave., Springfield, Mass.

ACASON MOTOR TRUCK CO.

Exclusively Truck Builders

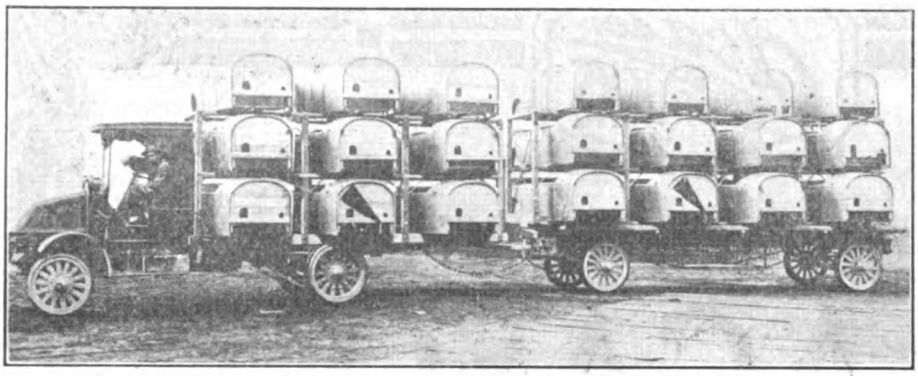
DETROIT, MICHIGAN

"Acason Trucks will be exhibited at the New York Commercial Car Show at the 8th Coast Artillery Armory, January 3 to 10th inclusive. Space O-1.

"Our exhibit at the Chicago Show, January 24 to 21st inclusive, will be at Space G-7."

(When Writing to Advertisers, Please Mention the MOTOR TRUCK.)

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Tractor and Troy Trailer That Hauls Loads of 21 Auto Bodies from Muncie, Ind., to Springfield, O., with Large Economy of Time.

BROOKLYN TRUCK ASSOCIATION FORMED.

As an outgrowth of the recent successful ship-by-truck parade held on Columbus day in Brooklyn, N. Y., the motor truck dealers of that borough have formed the Motor Truck Dealers' Association of Brooklyn. Plans are being discussed for holding a motor truck show, and it has also been decided to establish a bureau of information to disseminate motor truck information.

The following officers have been elected: President, A. S. Rempall; vice president, Frank O'Dell; treasurer, W. R. Couch; secretary, Alfred Duerr.

FRANKLIN WILL BUILD LIGHT TRUCK.

The H. H. Franklin Manufacturing Co., Syracuse, N. Y., is to build a ton truck, which will be produced in a factory apart from that now producing passenger cars. The truck will be developed under the direction of John Wilkinson, vice president of the company and the inventor of many of the patented characteristics of Franklin machines, and the design is now being perfected by James L. Yarian, who is to be chief engineer of the truck division of the company.

INTERNATIONAL TAKES OVER AEROPLANE PLANT.

The International Motor Truck Corporation has taken over the New Brunswick, N. J., plant and about $5,000,000 in cash and assets of the Wright-Martin Aeroplane Co. in accordance with a plan recently adopted by the stockholders of both companies.

On Jan. 2 permanent stock certificates of the International Motor Truck Co. will be exchanged for shares in the other companies.

HAULING BODIES BY TRAILER.

The J. S. Wagner Transfer & Storage Co., Springfield, O., is a general trucking concern which, to meet a particular haulage need, has just purchased from the Troy Wagon Works Co., Troy, O., a three-ton trailer with a 22-foot chassis for use in connection with a truck which has a body equipped with special racks.

During the recent freight congestion, the Westcott Motor Co. of Springfield had great trouble in getting bodies from Muncie, Ind., as oftentimes the bodies were a week on the way when sent by rail. To meet this condition the Westcott company called to its aid the Wagner Transfer Co., and the accompanying picture shows the truck and trailer outfit loaded with 21 light six Westcott touring car bodies, the number that could be loaded on a 40-foot railroad car. These bodies were transported from the Westcott body factory at Muncie, to Springfield, an approximate run of 100 miles each way. The round trip is made in 20 hours, this including loading and unloading time. The average hourly mileage is 15 miles. This makes a saving in time of six days.

In bad weather the bodies are protected by a large canvas envelope, which fits closely over the loads on both truck and trailer. The bodies average to weigh 500 pounds each, making the total load for truck and trailer 10,500 pounds, but in this case it is the bulkiness rather than the weight which governs the load.

The traffic manager of the Westcott company states that while it costs a little more to ship these bodies by truck and trailer than by railroad, the fact that deliveries are promptly made more than offsets the extra expense.

A Cadillac ambulance has been delivered to the Wilmington, Del., police department.

TRAILER HAULAGE KEPT FACTORIES RUNNING.

The raiload embargo effective in Detroit Dec. 6 on all incoming freight save perishable commodities, applied to carload lots or less, threatened to prevent operations of factories dependent upon sources of material supplies cutside of the city. One concern, the Paige-Detroit Motor Car Co., ordered two four-wheel Fruehauf trailers by 'phone for immediate delivery.

The trailers were delivered the following morning and within two hours were sent to Cleveland, O., for freights of parts made in that city. This emergency service (the company used Paige trucks as tractors) was such that not only was the factory operated, but the cost of haulage was reduced considerably as compared with rail shipments.

RECORD SHIPMENT OF REO TRUCKS TO FORT WORTH, TEX.

The great demand for motor trucks in Texas is shown by the fact that the first railroad train composed exclusively of motor trucks to be transported for any considerable distance, was dispatched from Lansing, Mich., to Fort Worth, Tex., by the Reo Motor Car Co. the latter part of November. This was composed of 29 cars, was loaded with 100 Reo Speed Wagons and was sent out as a "through freight" direct from Lansing to Fort Worth, consigned to the Stapleton-Brown Motor Co.

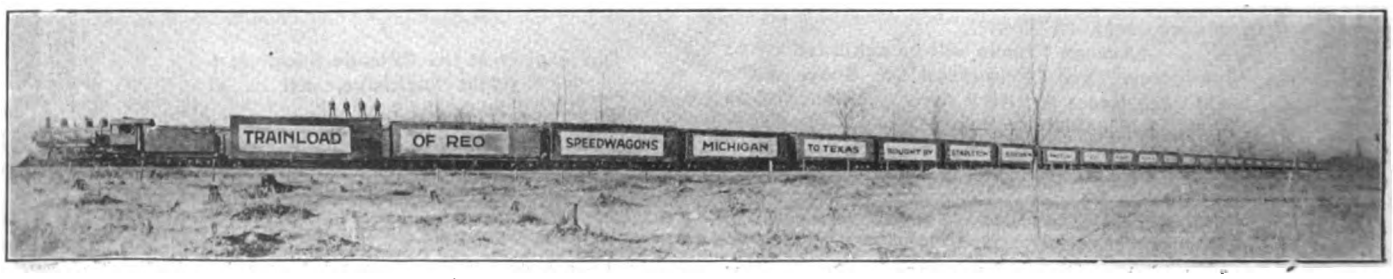
The accompanying picture shows the huge banners which were attached to the sides of the cars as they pulled out of the Reo yards.

A. M. GARDNER, ARVAC REPRESENTATIVE, DEAD.

A. M. Gardner, for a considerable period western representative for the Arvac Manufacturing Co., Anderson, Ind., manufacturer of universal joints, died at Chicago, Nov. 27. Mr. Gardner was very well known to the trade in the territory in which he was active and was highly respected.

WILL BUILD 75,000 LYCOMING ENGINES.

The Lycoming Foundry & Machine Co., Williamsport, Pa., is erecting new buildings and will install machine tools and equipment that is expected to increase the production of the plant 100 per cent. The planned output for the coming year is fixed at 75,000 engines.



Train Load of Reo "Speedwagons," Said to Be the Largest Single Shipment Ever Made, Leaving Lansing, Mich., for Fort Worth, Tex. The Train Carried 100 Machines.

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Two Years Ahead of the Industry

Jumbo Constructional Features—Standard

Straight line drive under load.

Radiator guard mounted independent of radiator. Radiator shutters controlled by driver; fan shroud; heavy ball thrust in steering knuckle; steel cab with three-man seat, heavy cushions, divided; fore-doors and disappearing curtains. Clear vision windshield, Motometer, Hub Odometer, Pig-Tail Tow Hooks, Foot-form Accelerator, Spring Drawbar for trailer attachment.

Electric lights, horn, generator, storage battery and impulse starter. No extras to buy except body.

Brief Specifications:

Buda Motor, Clark Internal Gear Axle, Zenith Carburetor, Brown-Lipe Transmission, Eisemann Magneto, Simplex Governor.

JUMBO

These Jumbo Features Lower Sales Resistance for Dealers:

The new Jumbo models are assuredly of advanced design. Jumbo engineers have not only selected the world's best units as equipment, but have added efficiency features to all Jumbo models that out-distance any and all competition.

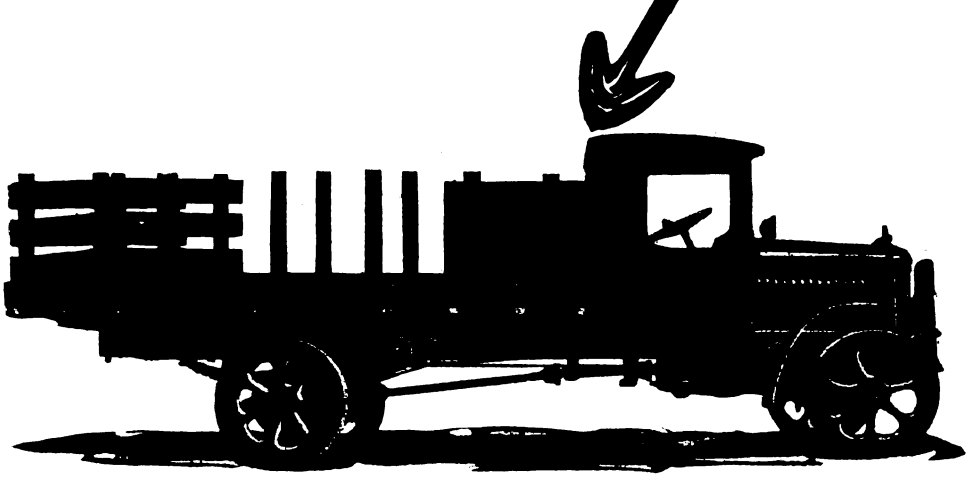
The prospective buyer cannot help but be impressed with the sturdiness of the truck as a whole, as well as with these leading features which give comfort to the driver and longer life to the truck.

Jumbo trucks are the first internal gear trucks to adopt war-time improvements—they are the first to include every equipment feature necessary to successful truck performance.

With these improvements, Jumbo trucks now comprise the most complete line of completely equipped internal gear driven trucks in America.

A complete line of Jumbo Trucks will be exhibited at the New York Truck Show, January 3 to 10, and at the Chicago Truck Show, January 24 to 31, 1920. In the meantime we want dealers to write us for full information. Open territory will be snapped up quickly.

NELSON MOTOR TRUCK COMPANY
SAGINAW, MICHIGAN



DEALERS—

It is a significant fact that in three years no Jumbo dealer has dropped the line, and that so far as we know there isn't a single dissatisfied owner in all the world.

The Jumbo story will be told to every possible prospect by dominant advertising in national business magazines, farm publications, newspapers, automotive trade journals and direct mail literature.

Get all facts—Our sales plan is especially attractive to progressive and far-visioned dealers.

NELSON MOTOR TRUCK CO.
Saginaw, Michigan.

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NEW PLANTS PLANNED AND BUILDING

LENHART TRUCK CO. FORMED AT MINNEAPOLIS.

F. F. Lenhart is president, E. L. Leicher vice president, F. A. Leicher secretary and R. F. Lenhart treasurer and manager of the Lenhart Motor Truck Co., which has been organized at Minneapolis, Minn.. to engage in the manufacture of power trucks. The concern is capitalized at $250,000.

The incorporators are well known business men. F. A. and E. L. Leicher are the heads of the Luverne Automobile Co., Luverne, Minn.; F. F. and R. F. Lenhart were the owners of the Lenhart Wagon Works, and O. L. Langworthy, who, with the four named constitute the directorate, is the owner of the Langworthy Lumber Co.

The company is to secure a factory and equip it and the intention is to engage in manufacturing on a considerable scale.

DITTMER GEAR AND MANUFACTURING CORP. BUILDING PLANT.

The Dittmer Gear & Manufacturing Corporation is erecting a plant at Lockport, N. Y., which is expected to be completed and ready for operating shortly after the first of the year. The company has capital of $175,000 and will engage in the manufacture of gears and transmission gearsets. The works will be constructed of steel, concrete and steel and will have approximately 22,000 square feet of floor space.

The head of the concern is A. H. Dittmer, who was for four years with the Packard Motor Car Co., for three years with the production department of the Thomas Motor Car Co., with the Chalmers Motor Car Co. and later he was purchasing agent and director of production and purchasing for the Covert Gear Co.

WILL BUILD A $5,000,000 TRACTOR PLANT.

The Kroyer Tractor Co., of which J. M. Kroyer is president, has been incorporated with capital of $5,000,000, and the intention is to manufacture tractors having four plows capacity on a large scale. Statement is made that the company will erect a plant on a site of 80 acres and that the construction will be begun next spring and carried to completion so that manufacturing can be begun within a year. The purpose is to produce about 1500 machines the first year.

NEW McQUAY-NORRIS PLANT OPERATING.

The McQuay-Norris Manufacturing Co., maker of piston rings, is now operating its new plant at St. Louis, Mo., which covers approximately half of a 6½-acre site. The works includes an office building, machine shop, foundry, service building and general warehouse.

VAN DORN ELECTRIC TOOL COMPANY EXPANDS.

Because of the increase of business the Van Dorn Electric Tool Co., Cleveland, O., has added to its plant a new four-story building having 30,000 square feet of floor space. The factory is devoted exclusively to manufacturing portable electric drills, reamers and grinders, which are recognized as especially economical tools wherever electric current is available.

During the war these drills were used in large numbers for ship building, one specific use being suspension in a "buggy" frame in which it could be moved as necessary to counterbore rivet holes in ship plate. Holes two inches diameter can be drilled in steel with this equipment, and small size drills are used in great numbers in automotive construction.

These drills are built to endure hard use. Every part is made in the Van Dorn plant, including the specially constructed motor, cutting the gears and tempering and grinding to .00025 inch. The construction is such that a strong man cannot exert sufficient pressure to stall the motor while drilling. All parts are inspected seven times before assembling, and after assembly each machine is tested for 1½ hours under heavy pressure, then disassembled for final inspection and reassembled and tested for 30 minutes.

O-K TRUCK PLANT AT OKLAHOMA CITY.

The Oklahoma Auto Manufacturing Co., builder of O-K trucks, has a plant at Muskogee, Okla., with 75,000 square feet of floor space, the shops being equipped to do all construction and finishing. The company constructs the chassis and bodies. It owns and operates its own gas wells, which furnish cheap power, with which electric energy is developed for all machines and tools in the works. Switches from the main tracks of several railroads afford unusually good receiving and shipping facilities.

The officers of the company are: C. E. Harris, president and general manager; E. J. Dunnigan, first vice president; H. L. Stroud, second vice president; F. H. Grubbs, secretary; A. H. Trumbo, treasurer, and J. T. Sandwich, manager of sales and advertising.

BUDD CO. INCREASES CAPITAL $2,000,000.

An issue of $2,000,000 eight per cent. preferred stock has been authorized by the stockholders of the Edward G. Budd Manufacturing Co., Philadelphia, Pa., builder of truck bodies and wheels, this making the total stock authorized to $4,251,700. The total issue now outstanding is $3,251,000, $1,000,000 of the new stock being purchased.

REYNOLDS MOTOR TRUCK CO. PROJECTED.

L. C. Wolf, W. F. Nank, H. C. Reynolds and W. F. Reynolds, all of Mt. Clemens, Mich., and three well known Detroit capitalists, have been elected directors at a meeting of the subscribers to the capital of a company which will be known as the Reynolds Motor Truck Co. and will be established at Mt. Clemens.. The directors have elected L. C. Wolf president.

The organization of the company will be completed and then a factory will be erected. The initial building planned will have dimensions of 50 by 200 feet, and this will be equipped for production. The intention is to produce several sizes of truck chassis and to give employment to about 200 men when production is begun. The designs for the chassis are now being developed and by the time these have been completed the factory will probably be in readiness for production.

KELLY-SPRINGFIELD EXPANDING ITS PLANT.

The Kelly-Springfield Motor Truck Co., Springfield, O., has work now in progress at its plant that will considerably increase the capacity of several departments. A three-story office building and other structures constructed of reinforced concrete will be completed within a short time. The expansion of the offices will facilitate the administration and accounting departments, both of which have been cramped, and the new shops, which will be given over largely to machine work, will considerably increase the production.

New tools and machinery for equipping the shops have been ordered and will be delivered shortly, so that with the completion of the buildings the new departments will be practically in readiness for production. When operating to capacity the plant will have an output of three finished trucks each working hour.

AMERICAN-LAFRANCE EXCHANGE OF STOCK.

An exchange of stock has been determined for the stockholders of the American-LaFrance Fire Engine Co., Elmira, N. Y., by which 10 shares of new stock of $10 par value will be issued on the surrenderer of each share of outstanding stock having par value of $100. The exchange was sanctioned at a special meeting of the stockholders.

UNION TRUCK EXPANDING BAY CITY PLANT.

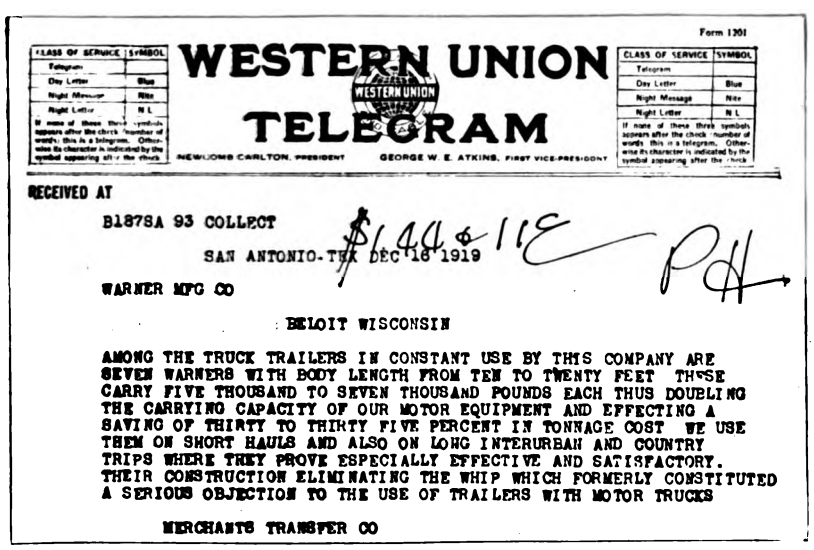
The Union Motor Truck Co., Bay City, Mich., is increasing the capacity of its factory by erecting a building which will, when completed and equipped, bring the output up to 15 trucks a day.

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Seven Warner Trailers Save 30% to 35% in Tonnage Cost

This fleet of Warner Four Wheel Trailers is in every-day service hauling loads which average 5,000 to 7,000 pounds on short and long hauls. Warner Trailers *double* the carrying capacity of the trucks which pull them.



Form 1201

WESTERN UNION TELEGRAM

CLASS OF SERVICE	SYMBOL
Telegram	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check

NEWCOMB CARLTON, PRESIDENT GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

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WARNER MFG CO

BELOIT WISCONSIN

AMONG THE TRUCK TRAILERS IN CONSTANT USE BY THIS COMPANY ARE SEVEN WARNERS WITH BODY LENGTH FROM TEN TO TWENTY FEET THESE CARRY FIVE THOUSAND TO SEVEN THOUSAND POUNDS EACH THUS DOUBLING THE CARRYING CAPACITY OF OUR MOTOR EQUIPMENT AND EFFECTING A SAVING OF THIRTY TO THIRTY FIVE PERCENT IN TONNAGE COST WE USE THEM ON SHORT HAULS AND ALSO ON LONG INTERURBAN AND COUNTRY TRIPS WHERE THEY PROVE ESPECIALLY EFFECTIVE AND SATISFACTORY. THEIR CONSTRUCTION ELIMINATING THE WHIP WHICH FORMERLY CONSTITUTED A SERIOUS OBJECTION TO THE USE OF TRAILERS WITH MOTOR TRUCKS

MERCHANTS TRANSFER CO

Frequently WARNER TRAILERS cut hauling costs in half. Whether the loads are heavy or the hauls are long, the same consistent ton-mile saving is shown. Consider the experience of the Merchants Transfer Company as a guide to what you can save. Each WARNER TRAILER will double the work of your trucks.

No matter what line of business you are in, find out more about WARNER HEAVY DUTY TRUCK TRAILERS. There is a size and type for every hauling proposition from the Two Wheel Warner used in the oil and lumber fields to the Semi-Trailer with Patented Warner Ball and Socket Fifth Wheel and the Reliable Heavy Duty Four Wheel types.

Warner Trailers will be exhibited at the National Automobile Shows—New York and Chicago.

WARNER MFG. COMPANY
25 Main Street Beloit, Wis.

WARNER
HEAVY DUTY
TRUCK TRAILERS
TWO AND FOUR WHEEL TYPES

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SALES CONFERENCES AND MEETINGS

SELDEN DIVISION SALES MANAGERS' CONFERENCE.

The annual conference of the division sales managers for the Selden Truck Corporation took place at the company's plant at Rochester, N. Y., Dec. 3-6 inclusive, and was conducted by Hal T. Boulden, sales director. It was a get-together meeting of the field and office men and was made as interesting as possible. The meetings were planned with short talks and general discussion.

At the meetings there were talks on the Selden series of trucks by Assistant Manager John R. Coleman, and discussion by Vice President Barry and Service Manager Henry R. Selden. Vice President R. H. Salmons told the history of the Selden organization and its products; President George C. Gordon spoke of "Business Conditions;" Advertising Manager J. E. Pickens dealt with "Advertising;" Assistant Sales Manager E. A. Shelly on "Home Office Cooperation;" Treasurer E. B. Osborne on "Accounting Practises,' and Vice President W. F. Reynolds on "Foreign Affairs."

One of the features of the conference was a dinner given by Sales Director Boulden at the Hotel Senaca, at which each speaker was tried for specified charges, J. Fred Cast of the Firestone Tire & Rubber Co. being prosecuting attorney (toastmaster).

The concluding day the division managers had 15-minute interviews with officers and department heads.

AUTOMOTIVE SERVICE ASSOCIATIONS.

During the week of the national automobile show at New York, the combined Automotive Service associations of New York and Newark, N. J., will hold a convention and banquet at 2 p. m., Jan. 5, at the Automobile Club of America. Alfred Reeves, general manager of the National Automobile Chamber of Commerce, will open the meeting and papers on service topics will be given by men well known in the industry, including Major Osmun of the United States Motor Transport Corps, who will outline how the automotive industry can cooperate with the army to have transport facilities in readiness for any emergency; Professor Favary, head of the automotive laboratories of Cooper Union, who will tell of the benefits derived from technical knowledge, and Dr. Walter Hervey of the board of examiners of the New York public schools, who will speak on education. The chairman will be Ralph C. Rognon, president of the New York Automotive Service association.

HEADS HIGHWAY COUNCIL.

J. Gilbert Leigh of Little Rock, Ark., head of the Good Roads Bureau of the Chamber of Commerce, has been elected chairman of the Arkansas State Highway Council. The headquarters of the organization will be at Little Rock.

AUTOMOTIVE ENGINEERS AT AKRON.

The Detroit and Cleveland sections of the Society of Automotive Engineers recently held a two-day session at Akron, O., as the guests of the Goodyear Tire & Rubber Co. The meetings were devoted principally to the presentation of technical information relating to the use of pneumatic tires on motor trucks, the Goodyear experts having collected valuable data of the company's development of this subject.

The visitors witnessed a demonstration of a new idea in truck design—the tandem axle construction—the Goodyear company's contribution to the truck industry.

The first evening the visiting engineers were the guests of the company at a banquet, at which President F. A. Seiberling and P. W. Litchfield, factory manager, spoke, the former giving his opinion that within three years the solid tire will be obsolete, the fabric will soon pass, but the pneumatic cord will be the ultimate tire. He also asserted that in a few years there will not be a highway in the country of less than 18 feet in width and that they will be of solid foundation to withstand wear and permit trucks to be operated at high speed.

Mr. Litchfield predicted that the trolley car will be succeeded by the motor bus. Street traffic conditions will soon become such that the entire width of thoroughfares must be utilized and traffic be continuous, with the use of such motor vehicles as can go up to the curb to take on and discharge loads without the interruption of other traffic. If the trolley cars remained, he stated that they would have to go underground as in London.

The festivities included tours of the Goodyear plant, athletic sports in the company's gymnasium and a balloon flight with Ralph H. Upson, the Goodyear aeronautical expert.

The Goodyear committee in charge consisted of C. R. Johnson, C. M. McCreery, J. E. Hall, W. S. Wolfe and E. R. Preston.

MORE ROOM WANTED AT MINNEAPOLIS SHOW.

Although the managers of the coming Twin City Automobile, Truck, Tractor and Industrial exposition at Minneapolis, Minn., had planned for a larger exhibition this year than ever before, when the allotments were made it was found that all available space would be taken, and late comers would be disappointed.

The date of this show is Jan. 31-Feb. 7, and it will be held in the Midway of the Overland building, which affords more floor space than Madison Square Garden, New York, and the Chicago Coliseum combined. Trucks and passenger cars will occupy space one-eighth greater than last year and tractors have been granted 47,000 square feet this year, 25,000 more than last. Altogether 338 manufacturers have accorded their patronage to the exposition this year.

ENGLISHMAN VISITS NAPOLEON PLANT.

Herbert P. Seabrook of Seabrook Brothers, London, England, representative of the Napoleon Motors Co., recently visited the plant at Traverse City, Mich., and inspected the plans made for the increase in the facilities to better care for its augmented export business.

CADILLAC MACHINE CO. DISSOLVED.

A decree of dissolution has been promulgated in the Michigan courts whereby the corporate existence of Cadillac Machine Co. of Cadillac has been terminated. The Cadillac Machine Co. was recently bought by the Acme Motor Truck Co. of Cadillac.



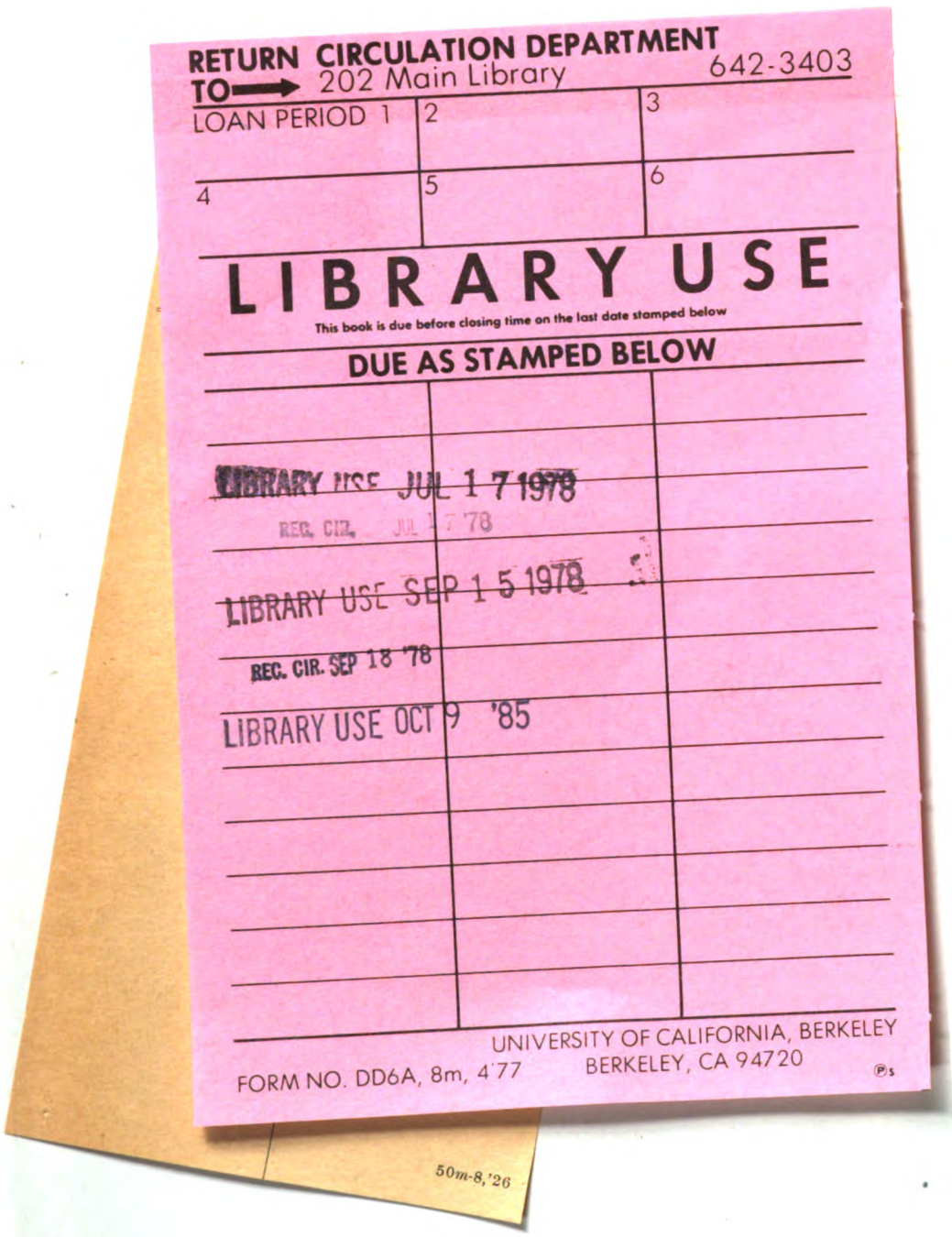
The Joint Conference of the S. A. E. Members of the Detroit and Cleveland Sections at the Goodyear Factory at Akron, O.

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